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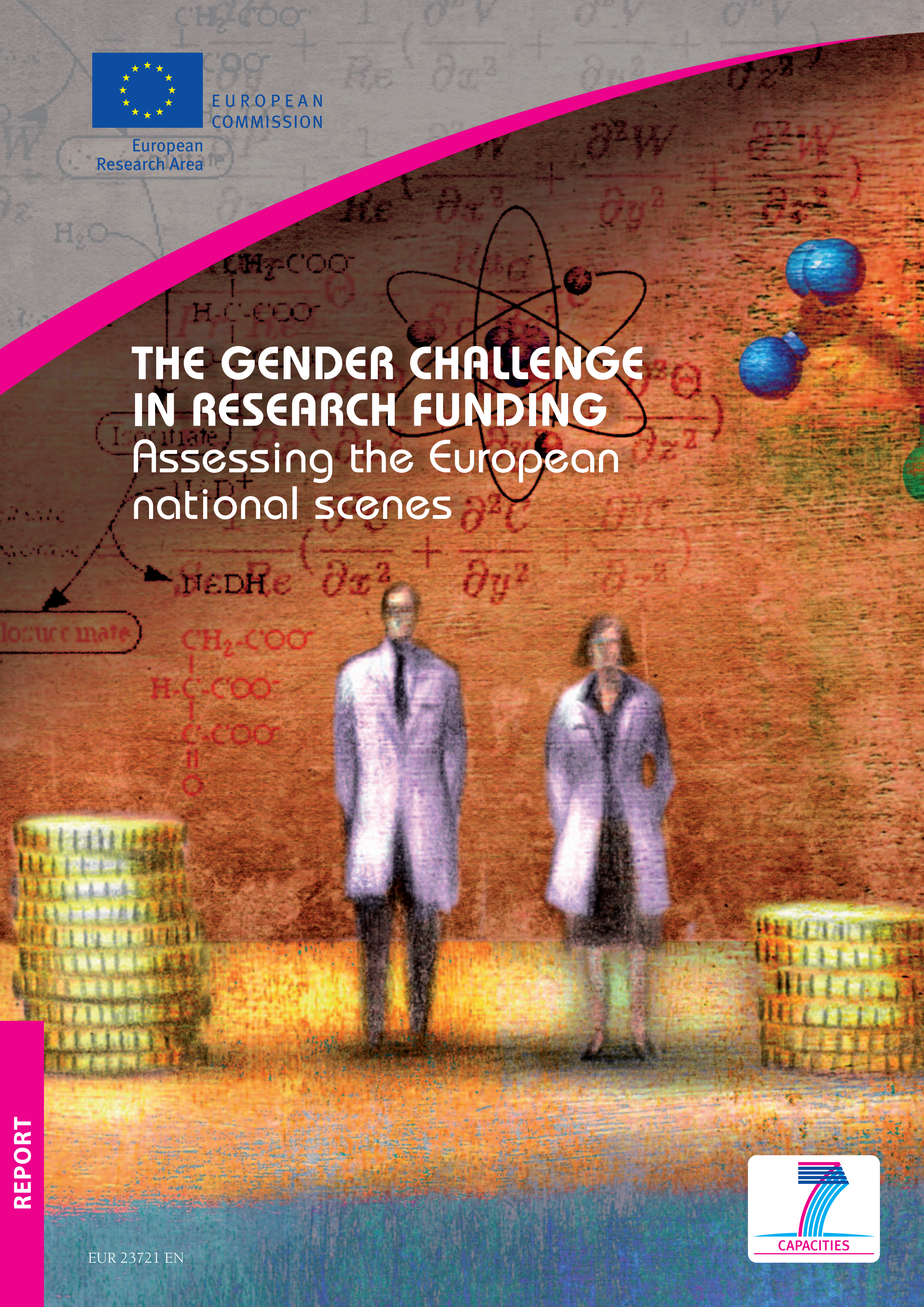

THE GENDER CHALLENGE IN RESEARCH FUNDING

Assessing the European national scenes

REPORT

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Assessing the European national scenes

DIRECTORATE-GENERAL FOR RESEARCH
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Table of contents

Foreword

The balanced representation of women and men in science has been part of a strategic approach to bring forward equal opportunities in the field of scientific research, enhance European competitiveness, and to realise fully the European innovation potential. Clear progress has been made in the last 10 years with the European Commission playing a key role by providing much needed impetus.

Equally crucial is the objective of mainstreaming gender in scientific research. The scientific job market should include more women at all levels of seniority. Female researchers, scientists and professors should be able to participate fully in the production of knowledge and research.

The Gender and Excellence expert group was set up to provide recommendations on the improvement of transparency in the procedures used in selection committees for the award of grants and fellowships and in access to research funding in general.

This group of 16 experts has provided contributions to this report by gathering the necessary national data for all 27 Member States and 6 Associated Countries to the 7th Framework Programme for Research and Technological Development. This European level synthesis highlights the existence of very good practices in the field of transparency and accountability of research funding systems which could be applied in other settings. However, data monitoring is not systematic, and publication of research funding results per gender per discipline is far from perfect.

The expert group has not found a large and systematic gender imbalance in terms of success rates in research funding in the funding systems studied, although a few exceptions exist. However, there is a clear difference in application behaviour: women are less likely to apply for funding than men, and this needs further study.

An overview of the national situations in terms of research landscape and gender settings is annexed to the report. The full national reports have been posted on the Science in Society web portal so that the work put into this analysis is made available to all interested parties for both policy-making and further study. This report is the first collection and comparison of its kind, and as such, it opens up new grounds for further research and in-depth analysis while calling for better and more systematic data collection.

I believe this report is not only an important contribution to the knowledge-base on gender equality in science, but also a first step to a more open and transparent research system in Europe at large.

Janez Potočnik
Commissioner

Executive summary

In all European countries and beyond, women are having difficulties getting ahead in research careers. Women are heavily underrepresented in research decision-making in Europe, and thus have fewer opportunities to influence the research agenda. Since access to resources is a major key to success, this report focuses on research funding across Europe, mainly but not exclusively from a gender perspective. It is the result of the work of a EU expert group set up by the European Commission to provide recommendations 'on the improvement of transparency and accountability of procedures used in selection committees for grants and fellowship awards and of access to research funding in general'. The report analyses the gender dynamics among applicants, recipients and gatekeepers of research funding, in funding processes, instruments and criteria, and the role of key funding organisations in promoting gender equality in research.

The focus of the expert group included national grant awarding procedures and accessibility of gendered data on success rates, amounts awarded and peers taking part in the decision-making and evaluation processes, distinguishing according to disciplinary fields. It centred on the funding of academic and basic research, on key public funding organisations in each country, and on competitive project funding and individual grants. Private funding organisations and charities, and bulk funding for institutions were not included. The expert group has collected data on 33 countries, the 27 member states and 6 associated countries (Croatia, Iceland, Israel, Norway, Switzerland and Turkey). This report should be seen as a systematic effort to map the European research funding landscape from a gender perspective and highlight key issues and needs for future action and research.

The expert core group consisted of twelve experts who provided data and analysis of the national contexts. Each expert examined several countries, to ensure that all were covered. In addition, four experts were invited on a shorter basis. The experts came from the European Union or European Economic Area and brought a wide and high-level expertise from various disciplines and countries, as members of national funding committees, administrators of funding organisations, or academics with research experience on the area. The experts contributed as individual experts, not as representatives of their organisations. Publicly available data were collected from websites, publications of the funding organisations and other stakeholder organisations, and from relevant research. When data were not publicly available, they were requested from the funding organisations. Other national experts were consulted, in order to complement and assure quality of the data obtained.

The countries under consideration could be roughly divided into two groups: proactive countries, which promote and monitor gender equality in research and research funding with active policies and measures, and countries relatively inactive in this area, with few, if any, initiatives.

Within the group of proactive countries, three distinct subgroups emerge. First, the global gender equality leaders, Finland, Norway, and Sweden, which have been particularly active in promoting gender equality in research and research funding since the late 1970s - early 1980s, joined later by Denmark and Iceland. Active more recently, a second proactive subgroup includes countries with the largest under-representation of women in research in Europe: Austria, Germany, Switzerland, Netherlands and Belgian Flanders. Finally, a third sub-group of proactive countries includes the UK, Ireland and more recently Spain, where, contrary to the countries of the previous subgroup, women have a stronger foothold in research.

The second main group is composed of countries, which are relatively inactive when it comes to gender equality promotion in research. This group, made up of the countries not mentioned above, includes both old and new member states as well as some associated countries. These countries show relatively little, sometimes hardly any, commitment or initiative in this area. The division between the proactive and the relatively inactive countries appears to follow rather well the global gender gap rankings of the World Economic Forum, with most proactive countries having relatively small societal gender gaps, and most relatively inactive ones larger societal gender gaps.

A number of innovative national policies which affect research funding were noted, such as gender balance targets (for example, in Slovenia or Switzerland) and legislation on gender quota of up to 40 % of the minority gender in committees (in Finland, Norway and Iceland). In a number of countries, integrated policies increase university funding based on their performance in terms of gender equity (for example, Germany, Netherlands, Ireland). Some have also set up specific national gender equality structures with strong prerogatives, which actively support their policies.

Several national research councils strongly and actively promote gender equality in research funding. These include the Austrian Science Fund FWF, the Academy of Finland, the German Research Foundation DFG, Science Foundation Ireland, the Netherlands Research Council NWO, the Norwegian Research Council, the Swedish Research Council, the Swiss National Science Foundation SNSF and the UK Research Councils. Many of these have established permanent infrastructures to monitor and promote gender equality in research, launched ambitious gender equality action plans, set up specific measures to promote women in research and conducted or are planning in-depth studies and monitoring activities on gender and research funding. Policy improvement can also be boosted by active engagement of the scientific community. An example of a bottom-up action is the Czech Republic National Contact Centre on Women and Science, which has succeeded in having funding mechanisms improved.

A number of actions specifically targeted at women, to promote gender equality, are implemented by many funding organizations. They range from actively encouraging women to apply, or setting targets for proportions of women funded, to specific programmes for women, supporting them at the start of their career, aiding them to return to research after a career break or providing additional assistance for mobility. Various measures facilitating work-life balance in research for both women and men have been built into some funding schemes.

Research funding decision-making involves numerous gatekeepers: members of national science and technology councils, funding organisation directors, managers, board members and staff members, members of evaluation committees and panels, and external reviewers. Detailed gendered data have been provided on gatekeepers in many of the countries under consideration. In most of them, decision-making and other gatekeeping activities in research funding, including peer review, continue to be dominated by men, in some cases overwhelmingly so. All-male committees and evaluation panels still exist in many countries, even in those where the proportion of women in research is relatively high. The recruitment procedures, in particular for peer reviewers, whose choice may be crucial, are often not clear.

Increasing the proportion of women among gatekeepers of research funding does not, according to the current empirical evidence, necessarily or automatically lead to better success rates of women applicants. However, in addition to providing more equal access to shaping the research agenda on all levels, better gender balance among gatekeepers demonstrates that women are full members of the system. It provides women researchers more opportunities to learn how the funding and evaluation system works and to become integrated into important networks, and allows them a valuable overview of current frontline research.

Eligibility rules for applying for funding concern age or academic age, degrees completed, place of residence or citizenship, and present position. Age limits are in many cases increased – by up to three years – if the applicants have children. Rules requiring that applicants have a permanent position and forbidding them to fund themselves within their project are particularly penalizing for women.

The existence of an efficient system for monitoring the outcomes of research funding is an essential element of transparency. Success rates by gender and discipline, concerning the main funding organisation(s) and general research project funding were obtained from 27 of the 33 countries under consideration, generally for 2007. Data are missing from French-speaking Belgium, Croatia, Cyprus, the Czech Republic, Greece, and Hungary. From Israel only data from 2000 were available, and data were only obtained from one UK Research Council. From Austria and Luxembourg, data by discipline were not obtained.

No very systematic patterns appear in the data obtained. No clear relation could be observed between the proportion of women in a field and their chances of success in obtaining funding. For instance, in some funding schemes and organisations women had higher success rates than men in engineering and technology or in natural sciences, the most male-dominated fields across Europe, and in others lower. Nor was any large and universal imbalance observed in favour of men. However, some cases of imbalance can be observed, with various degrees of statistical significance. In a number of cases, on the contrary, women have significantly higher success rates than men. An example is the Dutch NWO, where, because of low representation of women in research, particular attention is paid to the quality of evaluation, and where promotion of women in research is an important policy goal.

Another dimension of success in funding is the amount of funding obtained, for which success rates were obtained for only a few countries. Better monitoring is clearly needed here.

Some very partial data were obtained on post-doctoral fellowships. Although no particular problems were noted, previous research has flagged up strong gender differences at this stage. This question needs clarification. Various 'excellence initiatives' aimed at rewarding the very best researchers and including substantial amounts of research funding were also examined. These instruments generally showed particularly strong gender imbalance. This was also the case with the European Research Council Starting Grants.

The gendered patterns in application behaviour are a very serious problem: women are less likely to apply for funding than men and they request smaller amounts of money. Again, further research is needed to explore this phenomenon, to understand the dynamics and reasons behind it, and to elaborate counter-strategies.

The recommendations of the expert group include:

- Taking the gender challenge seriously, backing specific actions, supporting structures to monitor gender equality, and encouraging research on this area, all with strong political will. The denial of or lack of interest in gender equality appeared to be one of the main sources of imbalance in a large number of European countries.

- Increasing applications from women researchers. This implies encouraging and training women to apply and to request more funding. Measures for better work-life balance are essential.

- Improving gender balance among the gatekeepers of research funding, including committee or panel members and reviewers, and organising gender training, for all involved in the funding process. Allowing women more equal access to the inner mechanisms of research funding could also have major impact on improving their application rates.

- Gender monitoring and publishing of funding statistics on a regular basis, differentiated by discipline and research instrument. In-depth monitoring exercises, both quantitative and qualitative, should be carried out and should include an analysis of the pool of potential applicants, the study of team composition in proposals and generally of the gender impact of funding actions.

- Generally improving accountability and transparency in research funding, publishing procedures and criteria, using international evaluators, effectively avoiding conflicts of interest, providing feedback and instituting grievance procedures.

1. Introduction

1.1. Scope of the report and mission of the expert group

In all European countries and beyond, women are having difficulties getting ahead in research careers. Since access to resources, notably research funding, is a major key to success – both for women and for men – this report explores the gender challenge in research funding across Europe. It analyses the gender dimension and gender dynamics among applicants, recipients and gatekeepers of research funding, in funding processes, instruments and criteria, and the role of key funding organisations in promoting gender equality in research.

The report is a result of the work of an expert group titled Gender and Excellence, set up by the European Commission. The issue of gender and excellence has been debated on the European science policy agenda since the early 2000s, and several previous EU expert groups and workshops have discussed the question, resulting in the Gender and Excellence in the Making report (EC, 2004), and the WIRDEM report (EC, 2008b) on women in research decision-making. This expert group draws on and continues these efforts but with a specific focus on research funding. The issue of gender and research funding has also been addressed to some extent in earlier landmark EU reports, such as the ETAN report (EC, 2000) and National Policies report by Teresa Rees and the Helsinki group (EC, 2002) and some statistical data on funding decision-makers and recipients have been included in She Figures (EC, 2006), the ENWISE report (EC, 2003) and the Benchmarking report (EC, 2008a).

The mandate of the expert group was to 'provide recommendations to the Commission, adapted to the different national realities, on the improvement of transparency and accountability of procedures used in selection committees for grants and fellowship awards, and access to research funding in general. The focus of the expert group would be following:

- What are the different types of grant awarding procedures or research funding systems?
- What are the success rates in getting funding by sex?
- Which are the most transparent/opaque procedures/systems?
- What are the barriers (legal, administrative…) to accountability of procedures?
- What are the differences between disciplines?
- How are members of selection committees appointed (or other gatekeepers)? The expert group should develop specific profiles per country/discipline on the various existing systems, including data if available, and recommendations to overcome barriers to transparency and accountability'.

Due to the large variety in the funding systems across Europe it was not possible to aim for an exhaustive analysis at European level or a comprehensive statistical analysis. The group focused on gathering and analysing data on the funding of academic and basic research, and concentrated on key public funding organisations in each country, mainly on research project funding and individual grants. Private funding organisations and charities, and bulk funding for institutions are not included. The expert group collected data on the 33 countries – 27 member states and six associated countries to the Seventh Framework Programme (namely Croatia, Iceland, Israel, Norway, Switzerland and Turkey) – it was asked to consider and, for the first time, data have been systematically collected by discipline. This report should be seen as a systematic effort to map the funding landscape from a gender perspective and highlight key issues and needs for future action and research.

The report is centred on public competitive funding, a form that is progressively replacing recurrent funding in most of Europe. Success in obtaining competitive research funding is often used as measure of merit in academic careers. Furthermore, universities may additionally reward researchers successful in funding competition by awarding them extra top-up funds, as was reported to be the case, for example, in Germany, Italy and Poland.

However, some studies suggest that women may behave less competitively than men (e.g., Seymour, 1995), although some management research suggests women in management are more achievement-oriented (Powell, 1993). Women may profit from a competitive environment if the formalized rules of competition are transparent and fair (Reskin and McBrier, 2000). The issue is complex, and whether this type of funding allocation influences the outcome differently by gender should be explored in future research.

A number of publications also discuss the possible negative effects of competitive funding on the productivity of research in general. For instance, Geuna (1999, 2001; Geuna and Martin, 2003) predicts that competitive funding will slow down growth of generic knowledge by shifting effort away from fundamental research and will hamper innovativeness and creativity. An OECD analysis of the Danish case reaches the same conclusions, also pointing to the consequences of the shift in long-term visibility and in power from universities to funding agencies (Kalpazidou-Schmidt, Langberg and Aagaard, 2006). Although the present report focuses on competitive funding, this does not mean that it should not be critically questioned. The report Gender and Excellence in the Making (EC, 2004) provides a detailed discussion of what evaluation entails and presupposes. There is also an ongoing debate in the scientific community discussing the theoretical and methodological bases of bibliometrics (e.g., International Mathematical Union, 2008).

A number of other important related issues could not be addressed in this report, but should be focused on in further investigations. These include comparing funding in research fields dominated by women versus men in different national settings, exploring whether targeted research funding tends to concentrate on fields dominated by men, or investigating the amount and organisation of national funding for gender research.

1.2. Earlier research

The chances for success

The question of gender and research funding has only attracted attention fairly recently and is still much less often addressed in the literature than are the demographics of the scientific community, i.e. women's presence, careers or the glass ceiling. Like the question of the promotion of women scientists, it is linked to that of evaluation in science in general and 'evaluation of evaluation' is very often met with reticence or perceived as an implicit criticism of peer review and of peer reviewers. A review of past literature provides a number of background elements to the present survey. Although this is not the place to give a complete overview of research on the question of gender bias, it should be noted that the possibility of it occurring has been demonstrated experimentally: simply changing the submitter's first name resulted in a significant difference in the quality scores assigned to identical documents (Paludi & Bauer, 1993; Steinpreis et al., 1999).

The first study to clearly demonstrate the existence of gender bias and nepotism in evaluation, based on sound empirical research, was carried out in Sweden by Wennerås and Wold (1997), and concerned postdoctoral fellowships in biomedicine. The evaluation procedure in the case they examined was seemingly excellent: five committee members evaluated each applicant's dossier and they were not allowed to review candidates institutionally close to them. In spite of that procedure, it appeared that women – but also men not known to any of the committee members – had to publish approximately twice as much in order to receive the same score as men who were known by at least one committee member. It should be noted that, to access the archives needed to carry out their study, Wennerås and Wold had to employ a Swedish law providing access to official documents. This study, which had considerable impact, remains a key reference.

A number of funding bodies subsequently picked up the question and evaluated their own procedures. In the UK, the Wellcome Trust carried out an audit of its own grant awards, as a result of which it found no evidence of discrimination (Grant and Low, 1997). The UK Medical Research Council (MRC) conducted a study of its own procedures and similarly concluded that here was no clear evidence of discrimination in peer review (Grant, Burden, et al., 1997). The Wellcome Trust did, however, identify the problem of low application rates by women in general.

A further study, also of the attribution of fellowships to young researchers, was conducted in the Netherlands (Brouns, 2000a, b) on evaluations, which had taken place in 1994. The funding institution required two outside examiners to evaluate each application. It appeared that when women and men had equally high productivity scores the women were more often characterized as 'good researchers' while men were described as 'brilliant researchers'. Furthermore, while the allocation decisions were strongly correlated with the male candidates' age, number of publications, and the rapidity with which they had completed their PhDs, the same did not apply for female candidates, whose success correlated only with age. However, one of the most important findings of this study was that women's success rates strongly depended on discipline. They were in fact favoured in the Exact Sciences but disadvantaged in the Biological and Earth Sciences, realms where women are more numerous.

The general tendency of these first few European reports, except for the first one, was that they indicated little bias against women. Indeed, the Wennerås and Wold (1997) study has recently been replicated in Sweden (Sandström and Hällsten, 2008). The authors have found that nepotism remains a problem but that gender bias has been eliminated.

In the United States, an analysis of research grants from National Science Foundation (NSF), National Institutes of Health (NIH) and US Department of Agriculture (USDA) covered over 200,000 funding applications (Hosek et al., 2005). This very large sample allowed the authors to control for numerous variables such as age, experience and institution. In general they found no notable gender differences in success rates except in NIH where women received only 63 % of the funding that men had received in 2001-2003. A particularly interesting finding related to application behaviour was that women were less likely to re-apply for a grant (whether successful or not the first year) than men were.

An evaluation of the differences in research grant support in eight institutions affiliated to Harvard Medical School was carried out on 6319 applications (Waisbren et al., 2008). The authors found that, controlling for academic rank (note, however, that ranks are also heavily linked to gender), success rates were equivalent for men and women. However, once again application behaviour was found to differ: women submitted fewer applications, requested shorter grants (2.9 years vs. 3.4 for men) and asked for considerably less money ($115,000 vs. $150,000 for men).

In a wide ranging report on the situation of women scientists in the USA which includes some elements on funding, the National Academies of Science Committee on Maximizing the Potential of Women in Academic Science and Engineering (NAS 2007), presented an analysis of 'what went wrong' in a new NIH Pioneer award whose beneficiaries were all male the first year. Among corrective measures taken were restrictions to individual applications (avoiding institutional nominations) or increased training of reviewers. The report makes some innovative recommendations to funding organisations, including research and measures to improve work-life balance.

A recent analysis of the distribution of research grants by the Australian Research Council produces the same type of result: evaluations are not gender dependent but women are under-represented among the applicants (Marsh, Jayasinghe and Bond, 2008). The authors underline the lack of research on peer review and have themselves begun to analyse team composition and not only the characteristics of the principal investigator (PI).

What had begun to appear to be a general tendency to find no gender differences in the allocation of research grants has been questioned recently in a number of studies, which do indicate evidence of some degree of gender imbalance, particularly in the case of fellowships for young researchers. The European Molecular Biology Organisation (EMBO) has found that female applicants have had a consistently lower success rate (by 20 %) when applying for their Long-term Fellowships and for their Young Investigator Programme (Ledin et al., 2007). The EMBO study found no clear difference in application behaviour, on the other hand. What is more, in 2006, EMBO gender-blinded the evaluations for their Postdoctoral fellowships and the difference in success rate persisted. A bibliometric analysis showed that the female applicants had a statistically significantly lower number of publications.

To clarify these questions, Bornmann, Mutz and Daniel (2007) carried out a meta-analysis of 21 studies of possible gender bias covering 66 peer review procedures in different disciplines and at different levels. Among the individual studies, the odds (1) ratios vary from 22.1 % better odds in favour of men to 22.9 % in favour of women – indeed a high degree of dispersion. However, the effects in favour of men are by far the most frequent. Indeed, the meta-analysis showed that globally men have statistically significant greater odds of receiving grants than women by about 7 %. The authors do not separate postdoctoral fellowship grants and higher level research grants, but an examination of the data they provide concerning the 66 individual panels show that the most marked cases of a gender effect in favour of men concern fellowship schemes.

Bornmann, Mutz and Daniel (2008) have since provided another example of how fruitful a fine-grained analysis of large samples of grantees can be. They carried out an analysis of research grants attributed by the Swiss National Science Foundation from 2004 to 2006 and found a significant gender effect, in 2006, in general biology, basic biological sciences, and basic medical sciences. Besides confirming that gender differences are discipline-dependent, the field of life sciences being particularly problematic, this study provides a clear indication that, although allocation of grants for young researchers appears to be more unbalanced by gender, at least in some cases general research grants can also be.

(1) The odds are (number of funded proposals)/(number of rejected proposals). They are different from the success rate (number of funded proposals)/(total number of proposals submitted).

Why are women's application rates low?

A number of studies have flagged up differences in application behaviour between men and women. The issue of abnormally low application rates among women, raised by the Wellcome Trust study in 1997, prompted the European Commission to request a study of the European Commission's mobility fellowships in 1998-99 (the then 'TMR' programme under the Fourth Framework Programme). This study identified a number of reasons for low participation rates of women in science and barriers to applying for fellowship, in particular relating to the need for researchers to be highly mobile (Ackers, 2001). Women were in a minority in terms of applications: they comprised 39 % of applicants for PhD fellowships and 33 % for postdoctoral fellowships. Men were slightly more successful than women in both grant forms.

During 1999-2000, a study of research funding applications among British academics was carried out for the Wellcome Trust and the UK Research Councils by the National Centre for Social Research (Blake and La Valle, 2000). The study involved a survey of 3090 academic staff drawn from 44 Higher Education (HE) institutions in the UK in which the researchers were asked about their most recent application. The study found that women were as successful as men in getting the grants they applied for but were less likely to apply for grants. They found that 50 % of women and 59 % of men surveyed had applied in the past five years. However, a lower percentage of women than men were eligible to apply for grants provided by all research councils, except the Economic and Social Science Research Council (ESRC). The main influences on grant application behaviour were related to the employment status of women, who were concentrated in the lower grades, in fixed-term positions, more likely to be part-time and to take career-breaks. Thus they were less likely than men to be eligible to make applications. However, even among those academics who were eligible, more men than women applied for grants, and women applied for smaller numbers of grants. The study confirmed that there was little variation in success rates.

While the research was commissioned by the UK Research Councils and Wellcome Trust, many applications by the scientists surveyed had been in fact submitted to other bodies, with large gender differences: 56 % of women had applied to another body, compared with only 35 % of men. Women also appeared to apply for smaller amounts of funding than men. A higher percentage of women had made applications of less than £15,000 (20 % of women and 13 % of men). Amounts applied for in the middle ranges (£15,000-£100,000) were similar, but a higher percentage of men (45 %) than women (37 %) had applied for more than £100,000. The pattern was also similar with the amount obtained. 25 % of women had obtained less than £15,000 compared with 16 % of men, but 49 % of men and only 32 % of women had obtained more than £100,000. According to the authors, this might reflect the type of funding bodies which they applied to, since the amounts awarded were relatively low for 'other' bodies.

This UK report provided a number of very relevant recommendations, such as:

- expand post-doctoral fellowship schemes because they are requested by the same proportion of women and men applicants and because this is a crucial period for installation in a research career;
- study the case of all the 'small' funding sources as well as the main ones, since women apply there more frequently, to understand why they prefer them;
- pay particular attention to circulating information since women have less good access to networks;
- funding bodies should aim to influence the employment practices of higher education institutions;
- funding bodies should coordinate their gender actions.

An inverse Matthew effect?

Another detailed analysis of data from UK Research Councils has again observed a slight bias against women – but a definitely stronger one against 'non-white' applicants (Viner, Powell and Green, 2004). They also observed a direct advantage for people having participated in the peer review process. Previous findings concerning application behaviour were confirmed: women submit less than men. A new finding however was that receiving funding can have deleterious effects: according to the authors, 'women may suffer an 'inverse Matthew Effect' where their initial success leads to demands on their time as high profile members of an under-represented group which make it harder to sustain previous levels of research activity.'

Further studies recently carried out in Switzerland, Germany and Austria are discussed in the following chapters of this report.

In conclusion, the majority of these studies tend to indicate that there is not a very strong gender difference in success rates, with the exception of some postdoctoral schemes. However, a meta-analysis of a series of studies does indicate the existence of gender imbalance in success rates, men having 7 % greater odds of receiving funding than women. It should be noted that most of these studies have been carried out on large, better quality funding systems. Smaller systems may lack or claim to lack resources to conduct such studies. Very little is known about them and, as shown below, the situations are very diverse across Europe and the associated countries as well as within each country. Further data collection and research is definitely necessary. What does clearly emerge is that application behaviour differs between men and women. Women apply or re-apply less, apply to less prestigious sources, requesting less funding, and for shorter duration. There is clearly need for a great deal of further research on these questions. The following pages present an inventory of the situation in the 33 European countries, analyzing funding systems and availability of data. The aim is to evaluate the state of the art, to recommend good practices and to suggest paths for further research.

1.3. Methodology

This report is mainly based on extensive country profiles compiled by the expert group members, on discussions in five expert group meetings, and exchanges within the group by email. The expert core group consisted of twelve experts, including the Chair and the Rapporteur, who provided data and analysis of the national contexts. Most experts covered several countries, to ensure a full coverage of the participating countries. In addition, four experts were invited on a shorter basis to bring a particular expertise or experience. The experts came from within the European Union or European Economic Area and brought a wide range of expertise from various countries and disciplines, as members of funding committees, administrators of funding organisations, or as researchers having worked previously on these issues. The experts contributed as individual experts, not as official representatives of their organisations or countries.

Each expert group member compiled a profile of her or his own country, and additionally country profiles of one or two other countries, using a common template. Short country profiles of all 33 countries can be found at the end of this publication, and more extensive country profiles containing more detailed data are available on the web (2). Unless otherwise indicated, the data concerning the national funding setting and organisations are based on these reports, as well as publicly available material from ministries and funding organisations. The expert group members collected publicly available data from websites, publications of the funding organisations and other stakeholder organisations such as ministries, from relevant research and from the ERAWATCH database (3). When data were not publicly available, the members directly contacted the funding organisations with data requests. This led in some cases into a dialogue where ideas of improving the system were brought to the attention of the funding organisation. In some cases gendered data were produced at the expert's request by the funding organisations themselves. In a few cases, the expert group member obtained only the raw data and had to make calculations for this report. In addition, the expert group members have contacted numerous national

(2) http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=27

(3) http://cordis.europa.eu/erawatch/

experts, including the national Helsinki Group members (4), in order to complement and assure the quality of the data obtained.

The experts were requested to map and collect all available gender data on competitive national research funding, with a focus on the major public funding organisations. Statistical data for 2007 on general project funding applications, funding decisions and success rates by gender of the Principal Investigator and discipline were requested from all countries. Time series, if available, were welcomed. Information on post-doctoral fellowships was also collected.

In several earlier EU publications presenting data on gender and research funding (EC, 2006; EC, 2008a) the statistical funding data by gender have not been disaggregated by discipline. Previous research (Brouns, 2000a, b; Bornmann, Mutz and Daniel, 2008) has shown that averages including all disciplinary areas may hide large variations in gender differences. In this report disciplines were systematically distinguished when possible. There are problems in comparability due to differences in statistical categorization of disciplines in different national funding systems. When possible, the macro categories used in She Figures (EC, 2006), derived from the Canberra manual (5) were followed: natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences, and humanities.

This first chapter of the report has introduced the task, reviewed earlier research and discussed methodological issues. The second chapter gives a short overview of the European research landscapes and gender settings. The third chapter investigates the research funding systems from gender perspectives, including national and organisational policies, specific actions to promote gender equality in research funding, monitoring activities and transparency. The fourth chapter addresses the gatekeepers and gatekeeping of research funding, including evaluation processes and practices and the issue of eligibility. The fifth chapter discusses the issue of gender and success in funding, explores some special cases of highly prestigious funding instruments, and discusses application behaviour. Chapter Six presents the conclusions and the expert group's recommendations. The short national reports of all 33 countries covered can be found in the Annex.

(4) For information on the Helsinki Group on Women in Science, see http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=124

(5) The Manual on the Measurement of Human Resources devoted to S&T (the 'Canberra Manual') was issued in 1995. It was prepared in close co-operation between the OECD and the DGXII/Eurostat of the European Commission, other OECD Directorates, UNESCO and the International Labour Office (ILO), with the support of national experts. Drawing on best international and national practice and classifications, the 'Canberra Manual' provides definitions of human resources devoted to science and technology in terms of qualification (levels and fields of study) and occupation and discusses a number of variables of policy interest (see OECD website www.oecd.org).

2. The European setting: diversity in research landscapes and gender settings

Europe shows great diversity both in national research landscapes and in national gender settings. This diversity is important to keep in mind when exploring and comparing gender dynamics in research funding across Europe. In addition to differences in mere size, the 33 European countries discussed in this report show large variations in many respects: the overall size of the research sector; relative research intensity measured by R&D investment or proportion of researchers in the total labour force; the relative size of the government budget appropriations on R&D; the relative size of different research sectors; the degree of centralization and governance of the funding systems; organisation and funding of research careers (e.g. tenure); and the role and proportion of competitive research funding in research careers (EC, 2007). The existence of a federal structure plays an important role in research governance in some European countries, such as Belgium, Germany and Spain.

The size of the R&D sector of a country affects the dynamics of the national scientific community in various ways. Larger R&D systems offer more research job openings, and more opportunities for mobility (at least theoretically), and the pool of potential national evaluators and reviewers is large. Germany, France and the UK have the largest research settings in Europe, employing the largest numbers of researchers, and are spending 60 % of the total EU-27 R&D expenditure. Relative research intensity varies from 0.4 % of the GDP in Cyprus to 3.8 % in Sweden and 4.7 % in Israel. Only a few countries have already reached the Barcelona target of 3 % of R&D investment of the GDP, while the EU-average has been stable at 1.85 % since 2000 (Eurostat, 2008).

Academic and basic research in Europe is to a great extent funded by the state and subject to national decision-making and monitoring. Funding is increasingly competitive. In many countries, part of the academic research funding is allocated as institutional bulk funding to universities or science academies but external, competitive funding plays an increasingly important role. Many old EU member states, such as the UK and the Netherlands, have a long established national research council system to allocate competitive research funding for academic and basic research. In many new member states, academies of science have traditionally been the major national elite research organisations employing large numbers of researchers on tenured positions, and research funding until recently has been non-competitive. Several countries, such as Bulgaria, Croatia, France and Hungary are currently in various stages of reforming or streamlining their research funding systems, and the trend appears to be towards increasing competitive funding. For example, in Bulgaria the ratio between the non-competitive institutional project financing and the competitive project financing was 90:10 in 2004 but reached 70:30 in 2007. In a few countries, such as Italy and Greece, the relevant ministries directly allocate public competitive research funding without intermediate national organisations. Many countries combine several funding systems. The ongoing reforms of funding systems would offer a golden opportunity to take gender issues on board as a part of quality improvement, but this seems rarely to be the case.

Women are underrepresented among the researchers in the EU-27 and other countries discussed in this report. Latvia is the only EU-27 country in which female researchers are in majority in all sectors: HE, business sector and governmental sector research, and only in six other member states: Bulgaria, Estonia, Lithuania, Portugal, Slovak Republic and Romania, does the share of female researchers exceed 40 % (Eurostat, 2008). Common to all countries is that women continue to be under-represented in the highest academic ranks and in decision-making positions in scientific organisations, even if this under-representation varies somewhat from country to country, as has been demonstrated by the EU Women and Science reports during the past decade (EC, 2000; EC, 2003; EC, 2006; EC, 2008a and b).

Despite the specificity of the research sector, its gender dynamics are also affected by the wider socio-cultural gender context of each country. The overall gender settings vary from country to country and it is essential to take this into account when trying to understand the diversity across Europe. European countries vary in terms of how they have adopted and implemented gender equality policies in the society at large. The basic gender equality policy framework has been strongly supported by the action of the Commission and has been strengthened with the EU equality laws. Most of the 33 countries considered in this report have passed an Act on Gender Equality or Equal Opportunities, and all have some kind of gender equality agency within the national government. In many new member states this legislation and these agencies are relatively newly established. Some old EU member states, as well as Iceland and Norway, are strongly committed to gender mainstreaming as a policy principle, but many among both the old and the new member states are not. Several countries have women and science units in their respective ministries (EC, 2008a).

Because of these variations in the gender contexts, comparisons across countries are difficult, but recently developed global gender indicators can be useful for the purpose. The Global Gender Gap Report 2008 by the World Economic Forum ranks 130 countries in the world, representing 92 % of world population, on the basis of quantitative indicators linked to gender relations in economic activity, educational attainment, political empowerment and health and survival (World Economic Forum, 2008). European countries are ranked high in this global gender gap index, with some exceptions. The 33 countries covered by this report include the four having the smallest global gender gap (Norway, Finland, Sweden and Iceland), and four more within the ten smallest ones (Denmark, Ireland, Netherlands, Latvia). Germany, UK, Switzerland, France and Spain are also within the twenty smallest ones. The majority, 25 of the 33 countries, have a global gender gap rank smaller than the global median but in some the gender gap is larger. Countries with larger gender gap include some old member states, some new and one associated country: Cyprus, the Czech Republic, Greece, Italy, Luxembourg, Malta, Romania, and Turkey.

Drawing from the global gender gap data a broad framework was outlined to facilitate the understanding of gender dynamics in research funding in different national contexts. The framework combines the general gender equality context in the societies with women's representation in the HE research. The framework is based on grouping the countries using two indicators, the first related to overall gender equality in society: the global gender gap rank of the country, and the other related to the relative presence of women in research: the proportion of women researchers in HE – the pool from which most of the female applicants and recipients of competitive funding for public research are recruited (Table 1). The countries were divided into those with smaller than EU-27 median gender gap rank and those with larger than EU-27 median gender gap rank. The other division concerns the proportion of women among researchers in the HE sector in the EU: countries have been divided among those with more than EU-25 average proportion of women in HE research and those with less than EU-25 average proportions, using She Figures 2006 (EC, 2006) data on year 2003.

Table 1 illustrates the complex relations between the overall gender gap in the society and the share of women among HE researchers. Four country groupings emerge which do not follow clear political or geographical lines. Smaller than the EU median gender gap countries include both those with more than average women in HE research (Nordic countries except Denmark, UK, Ireland, the Baltic states except Estonia, Spain, and Belgium), but also countries with less than average women in HE research, such as the old member states Austria, Denmark, Germany, France, Netherlands, as well as Switzerland. Correspondingly, countries with larger than median gender gap in society include both those with more than average proportions of women in HE research, such as several new member states from Central Eastern Europe (Bulgaria, Estonia, Hungary, Poland, Romania, Slovak Republic), but also Portugal, Greece and Turkey. Countries with both high gender gap and less than average proportions of women in HE research include the Czech Republic, Cyprus, Israel, Italy, Malta, and Slovenia.

This short introduction into the diversity of the research landscapes and gender settings is intended to serve as a contextual background for the report, which explores the activities of funding organisations. These are discussed in the following chapters.

Table 1

Overall gender gap in society and share of women researchers in the higher education sector

Smaller gender gap, more women in HE research
Norway, Finland, Sweden, Iceland, Ireland, Latvia, UK, Spain, Lithuania, Belgium

Smaller gender gap, fewer women in HE research
Denmark, Netherlands, Germany, Switzerland, France, Austria

Larger gender gap, more women in HE research
Bulgaria, Estonia, Portugal, Poland, Hungary, Slovak Republic, Luxembourg, Romania, Greece, Turkey

Larger gender gap, fewer women in HE research
Slovenia, Israel, Italy, Czech Republic, Cyprus, Malta

Countries in each group listed in global gender gap rank order; first mentioned country has smallest gender gap. Smaller gender gap = gender gap rank smaller than EU-27 median,
larger gender gap = gender gap larger than EU-27 median. More women in HE research = more than EU–25 average in 2003, fewer women in HE research = less than EU-25 average in 2003.
Comparative data on women in HE research in Croatia was not available.
Data sources: World Economic Forum: Global Gender Gap Report 2008. EC: She Figures 2006.

3. Research funding systems and gender

In this chapter, research funding systems in Europe are discussed, particularly, but not exclusively, from a gender point of view. National and organisational policies promoting gender equality are shortly addressed first, then the importance of monitoring, and finally examples of specific measures and actions to promote gender equality in or through research funding. This chapter does not aim to give an exhaustive account of all 33 countries but rather serves to illustrate the variety and key characteristics with country and organisational examples.

3.1. National and organisational policies

The general gender equality context of a country has an impact on the gender dynamics in research funding and on research careers. There is great variation across Europe in national gender equality policies and in how gender issues are taken into account in science and research policies. When comparing the gender equality policies in the field of research, the countries can be roughly divided into two major groups: **proactive countries**, which promote and monitor gender equality in research with active policies and measures, and countries **relatively inactive** in this area, taking few, if any, initiatives. This division follows rather well the Global Gender Gap rankings but is not directly linked to the proportion of women in HE research (see Table 1).

Among proactive countries with advanced policies and several measures, three distinct subgroups emerge. First, the global gender equality leaders, especially Finland, Norway, and Sweden, have been also particularly active in promoting gender equality in research since the late 1970s – early 1980s, joined later by Denmark and Iceland. In these Nordic countries, gender equality promotion is embedded in society. A second group includes countries that have more recently become very active in this area. They combine high research intensity with the largest under-representations of women in research in Europe: Austria, Belgium (Flanders), Germany, Netherlands and Switzerland. A third, less homogenous subgroup of proactive countries includes the UK, Ireland and very recently Spain. All three have adopted advanced policies and introduced innovative measures both nationally and organisationally, but clearly more recently than the Nordic countries. They differ from the second subgroup of newly active countries in that women have much more foothold in research.

The group of **relatively inactive countries** is large and very heterogeneous. Most of the countries in this group have larger gender gaps in society than the EU median (see Table 1). They include some old and some new EU member states, both large and small, as well as applicant and associated countries: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, France, Greece, Hungary, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Slovak Republic, Slovenia, and Turkey. These countries show relatively little commitment or initiative in this area. Reasons for this inactivity are certainly complex and varied, and linked to the historical, social and political development of the countries.

We shall follow this classification below.

3.1.1. National policies

The national policies on gender equality in research vary across Europe and are affected by the general gender equality framework. For example, legislation on gender balance or gender quota in public committees exists in a few countries, such as Finland (since 1995), Norway, Iceland (since 2008), affecting also the gender composition of boards of national research funding organisations. In Belgium, the Flemish Ministry of Economy, Science and Innovation introduced in 2006 a quota of one third of one sex in officially established boards advising the government and individual ministers; funding organisations are also bound to this quota. The quota is monitored by the government, but there are no sanctions. In some other countries, such as in Ireland, the government has set up a minimum target of 40 % for women's representation in state boards. In others, this initiative is made at the level of the funding organisation, such as in Switzerland. The Swiss Research Council has set a target value 25 % for 2011 for the proportion of women in its governing bodies. In Slovenia on the initiative of the Committee on Women in Science the Slovenian Agency for research accepted the target value of 30 % for the proportion of the underrepresented sex in its expert bodies.

However, legal frameworks, infrastructures to promote gender equality, and mainstreaming mentioned as a policy principle do not necessarily mean that the legislation and policies would be effectively implemented or that gender awareness across the society or in the R&D sector would be high. The degree of political will to promote gender equality plays an important role here. Some examples are presented in the following section.

The global gender equality leaders

The Nordic countries have currently the lowest overall gender gap in a global and European comparison. In these countries, gender equality is embedded in the society, and has been visibly and continuously on the political and societal agenda since the 1970s, increasingly so in the R&D sector since the early 1980s. Ministry level reports on promoting women in science were commissioned earlier than in other European countries, various support and coordinating actions have been funded at national level since the late 1970s – early 1980s, and the issue of gender equality in research has been in the higher education and science policy agenda since then. The proactive gender equality approach in the R&D area has become especially comprehensive in Sweden and Norway, the policy context of which is presented here in more detail (on Finland, see, e.g. Husu, 2007).

In **Sweden**, since the 1970s, successive governments have regarded gender equality as an area of priority. Gender equality is no longer considered to be a women's issue; it is seen as a policy area affecting all citizens and requiring active efforts of both women and men. Equality between women and men must be considered in all decision-making. In order to be able to carry out better analyses of the situation of men and women in various regards, since 1992 all individual based official statistics must be gendered.

Since 1994, the Swedish government has had as a principle that the gender perspective should be mainstreamed into all policy areas. Sweden has also adopted a 'double strategy' concept, meaning that both mainstreaming and special measures are used to improve gender equality. In 1999 a new clause was introduced in the Higher Education Act, stating that HE institutions are to promote gender equality in education and research. Similar stipulations apply to the research councils and the Innovation Agency. Of great importance are also the government's directives to the HE institutions and research funding bodies that they must in their annual reports (and other documents) submit gendered statistics and report what measures they have taken to improve equality between the sexes.

In **Norway** all state enterprises, and recently also private companies, must have 40 % female representation on their governing boards. This includes universities, university colleges and research institutes. The University Act, revised in 2005, permits the advertisement of positions targeting the underrepresented sex in certain conditions: if one sex is clearly under-represented in the position category and discipline in question, persons of that sex shall be specifically invited to apply. In addition, the Act requires that both sexes be represented on selection boards. Every HE institution must promote gender equality within all categories of employees at the institution. The Ministry of Education and Research has recently announced a proposal for temporary junior research positions reserved for women in scientific fields where women are very few. The Minister has pointed out that after the EFTA court ruling in 2003 [6] against such earmarked positions, some changes in the EEA (European Economic Area) rules have been made, which should make the proposal feasible. This measure and other gender equality measures will be presented in a forthcoming government bill concerning the recruitment of researchers in academia.

(6) EFTA (European Free Trade Association) court, case E-1/02 EFTA surveillance authority vs. Norway.

In 2004 the Norwegian Research and Higher Education Minister set up an independent Committee on Mainstreaming Women in Science to support and provide recommendations on measures that can contribute to the mainstreaming of gender equality efforts within universities and research institutes, and renewed its mandate for 2007-2010. This Committee contributes to awareness raising around issues connected to the skewed gender balance in research. It has an extensive website with information both in Norwegian and English on resources and tools related to promotion of gender equality in science.

Newly active countries with fewer women in research

The second subgroup of more recently active countries, where gender issues in research are visibly and broadly on the policy agenda includes Austria, Belgian Flanders, Germany, Netherlands and Switzerland. As with the Nordic countries, most are highly research-active countries but they differ from the Nordic and most other EU countries in that women's representation is very poor in research in general and especially low in the highest ranks of academia.

She Figures 2006 (EC, 2006) reports that **Austria** is in the lowest third of EU-25 countries regarding the representation of women in science. Since the 1990s, gender policy issues play an important role in the Austrian scientific system. A new legal framework for universities was enacted in 2002. Equal opportunity for men and women is one of the key guiding principles of this law. Each university in Austria has to develop an equality plan to promote the opportunities of women in science as well as to establish an equality committee. In addition, research on gender issues should be coordinated by specific university bodies. At a national level, four ministries coordinate their activities to improve the integration of women into science and technology in general (fFORTE programme). In concordance with the legal framework, promoting women in science is closely related to a general policy orientation of gender mainstreaming and gender budgeting. The Austrian government supports research activities on the impact of new trends ("excellence", newly launched programmes) on gender issues. The legal framework also supports a stronger anchoring of specific gender related topics within the scientific system (gender studies).

The representation of **German** women in the highest academic positions is at the very bottom in European comparison (grade A: 9.0 % in 2004; EC, 2006) although among graduates women and men are equally represented. Concerning the German research system, the loss of women is seen as highly problematic because investment in human capital is wasted when women drop out at higher academic levels. This discussion is related to the question of a general 'loss of talents' and the challenges for a knowledge based economy. Thus, investments into research and development are seen as key factors for the German economy and society at large.

In the **Netherlands** the proportion of women in research is among the lowest in Europe, and only one out of ten full professors is female. The government's long-term policy plan on emancipation for 2008-2011 includes plans to increase the number of women in top positions. For universities, the Minister of Education has set a target of at least 15 % of female professors by 2010. The ministry is going to have an administrative dialogue with the higher education institutes on personnel policy and the through-flow of talent, on under-utilised female potential, transparency of the selection procedures, equal pay, and representation of women in higher scientific and management positions. Individual talent programmes are funded aimed at the through-flow of women to the top of the scientific field (Women in the Innovation Impulse, Aspasia, discussed further in this report), and new research into gender mechanisms within the scientific community will be funded.

Belgium is unique amongst the EU Member States in that it is the only country where, since the early 1990s, research policies have been decentralised across several regional structures. In Flemish speaking Belgium, women are poorly represented in research. In 2006 only 15.5 % of academic personnel of the Flemish universities were women and only 5.5 % of all (full and temporary) professors. The situation is somewhat more balanced in the French speaking universities, with 21.6 % women in the academic staff and 10.5 % of full and temporary professors. In 2006, the Flemish minister of Economy, Science and Innovation set out a policy for Flemish science to increase diversity. More funding is allocated to universities who employ more female professors and attract new academic talent from outside the university and country.

Newly active member states with more women in research

A third rather loose subgroup among the proactive countries includes those with recent rapid development, such as **Spain**, and those with more long-term and broad engagement such as the **UK** and more recently **Ireland**. All differ from the previous proactive group in that women are clearly better represented in research in general as well as in top positions, higher than the EU-25 average (EC, 2006), but compared to the Nordic countries their active gender equality policies in research are more recent (see, e.g. EC, 2000).

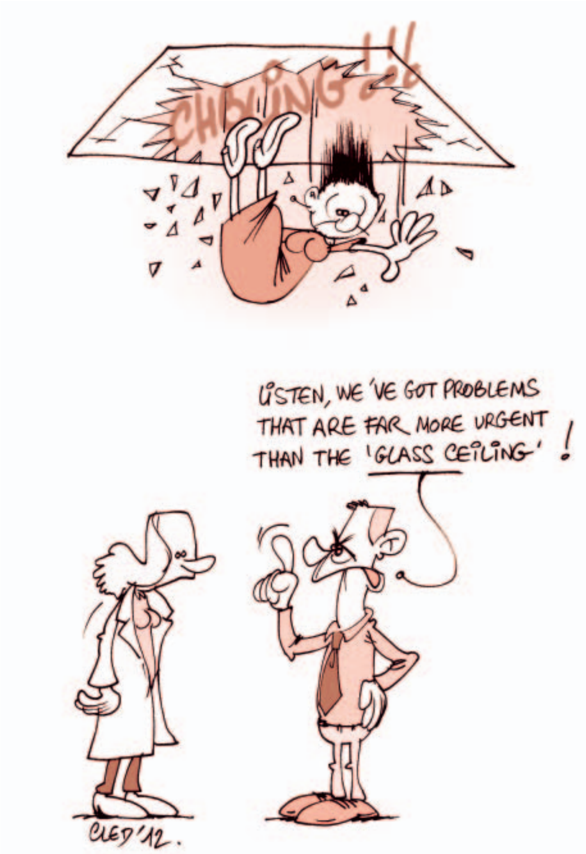
The **Irish** government is committed in the Programme for Government to achieving a minimum of 40 % representation of women on state boards (Allen, 2001), although this target has not yet been reached (National Women's Council of Ireland, 2008). The government has boosted women in science and technology research by a large SFI grant scheme in the mid-2000s (for details, see section 3.2).

In **Spain** a rapid development of gender equality activities and increase of gender awareness in all sectors of society, including R&D, has taken place since the mid-2000s due to a change in government. This is indicated by the approval of a new law on gender equality, the reform of university law and the creation of the Ministry of Equality, as well as equality units in all ministries. In addition, there are institutions at national and regional level, responsible for development and execution of government gender equality action plans, called Institutos de la Mujer (Women's Institutes). The recently approved law for equality of women and men (2007) establishes mainstreaming of the equality principle. Statistics and studies generated by public bodies must systematically include sex as a variable. Mechanisms and gender equality indicators must be developed. In addition, all companies with more than 250 workers must design and apply an equality action plan. The reform of the university law in 2007 establishes gender balance in collegiate organs. All universities must have equality units. Gender balance in research teams must be promoted.

In the **UK**, the Equality Act of 2006 places a general duty on all public authorities to eliminate discrimination and harassment that is unlawful under the Equal Pay Act (1970) and the Sex Discrimination Act (1975); and promote equality of opportunity between men and women. Since 2007, the UK research councils have been required to publish a Gender Equality Scheme (Equality and Human Rights Commission, 2007). The government has a target to achieve 40 % representation of women on SET-related committees, but there are no specific laws on gender balance in public committees (Rees, 2002).

The relatively inactive countries

The relatively inactive countries show less initiative or commitment to promote gender equality in research. The group is more heterogeneous than the previous ones, but there are some common denominators. The majority of the countries in this group: Bulgaria, Croatia, Czech



Republic, Cyprus, Greece, Estonia, Hungary, Israel, Italy, Luxembourg, Malta, Poland, Portugal, Romania, Slovak Republic and Turkey have a relatively high overall gender gap in society (7). The group includes both countries with clearly higher than EU average proportion of women in HE research, such as Bulgaria, Latvia and Portugal, countries or regions close to EU average, such as France, French-speaking Belgium and Italy, and countries where these proportions are clearly lower, such as the Czech Republic.

The **Czech Republic** has a high gender gap for an EU country and less women in HE research than in the EU in average. An ambitious reform of the R&D system has been started in 2007 but gender issues in research are not addressed. In **Estonia** the main R&D policy document, Research and Development Innovation Strategy for 2007-2013, mentions in general terms equal conditions for men and women in research careers but without practical measures or targets. In **France** even if there is a specific structure in the Research Ministry to monitor gender issues, gender equality appears not to have high priority and the question is given relatively little attention. In **Israel** in spite of some early measures in favour of gender equality and very high research intensity, the question appears to be given low priority at present. In **Italy** implementation of gender equality legislation appears to be poor, and policies and evaluation guidelines were found to be completely ignoring gender issues. In **Latvia**, the only EU-27 country with more female than male researchers in all three main research sectors, the issue of gender equality is still seen sceptically, and can be sometimes labelled as a foreign import the society does not need.

In general, in the new member states where gender equality legislation is relatively recent, there are relatively few indications on political will to promote gender equality in the R&D sector, even in those new member states where the overall gender gap is smaller than average, such as in Latvia and Lithuania. However, some new positive developments were identified in this area, although it is too early to assess their impact.

Bulgaria is reforming its R&D system, introducing international evaluation and increased support for young researchers. In 2002 a National Steering Committee on Women and Science was established at the Bulgarian Ministry of Education and Science. However, this body has no budget and could not carry out any activities. The **Lithuanian** Ministry of Education and Science adopted a Strategy for implementation of equal opportunities of men and women in the RTD system in June 2008. For the years 2008-2013 there are plans to develop gender mainstreaming tools, such as review and amendments of law and changes in the financing system, additional financing tools for women scientists, and recommendations for research and higher education institutions to implement gender mainstreaming tools. In **Poland** some years ago a Steering Committee 'Women in Science' was established in the Ministry of Science and Higher Education, to monitor women's position in science and to increase awareness and public visibility of the under-representation of women. In **Slovenia** the Ministry of Science and Technology named a national coordinator for women in science in 1999. This was followed in 2001 by the establishment of a National Committee for the enhancement of the role of women in science for a period of four years, and again for 2005-2008. This committee has raised awareness and informed relevant authorities and the general public in Slovenia, for example, concerning national science awards. The Slovenian Research Council corrected discriminatory conditions in public calls for project proposals (paternity/maternity leave, active research years) on the initiative of the committee.

3.1.2. The role of research funding organisations

National research policies set a frame for the promotion of gender equality in research, but what specific role do the research funding organisations play here? This report focuses mainly on key public national funding organisations in the 33 countries. It is highly likely that the key national funding organisations have the most advanced policies and practices in the country. They can also be assumed to act as role models for other funding organisations in terms of policies and practices. However, the degree of transparency and accountability among other funding

(7) This was also the case of France up until 2007 (World Economic Forum, 2007 and 2008).

agencies may be more varied. It will be no doubt necessary to widen the scope of investigation in the future.

Several national research councils have adopted a proactive role in promoting gender equality in research funding. These include the Austrian Science Fund FWF, the Academy of Finland, the German Research Foundation DFG, the Netherlands Organisation for Scientific Research NWO, the Research Council of Norway, the Science Foundation Ireland SFI, the Swedish Research Council, the Swiss National Science Foundation SNSF, and the UK Research Councils. Many of these have established permanent or long-term infrastructures to monitor and promote gender equality in research, launched gender equality action plans, set up specific measures to promote women in research, and conducted or are planning in-depth studies and monitoring activities on gender and research funding. It is noteworthy that most of these kinds of proactive research councils are from countries where there is political will to promote gender equality in research, and in which the overall gender gap is among the smallest in the world. Some examples on how different funding organisations can act to promote and monitor gender equality in research are presented in the following section.

In **Austria**, the Austrian Science Fund FWF founded in 2005 an in-house staff unit for gender issues in order to promote better career prospects for female researchers. The main targets are safeguarding appropriate data on applications and approvals regarding equal opportunity of women and men, promoting the visibility of women in science, promoting chances to combine careers and family, increasing the number of female project leaders and female representation on the FWF board.

In **Finland**, the Academy of Finland (the national research council organisation) adopted its first comprehensive Equality Plan in 2000, amended it in 2005, and has had an Equality Working Group 2005-2007, the task of which has been to monitor the activities of the research councils and the Academy from a gender equality perspective. Management of equality issues is in the process of being re-organised as part of more general re-organising of the Academy activities. The Equality Plan is based on the principle of mainstreaming and its focus areas are preventing discrimination and harassment; recruitment and advancement in research careers; reconciling work and family; gender balance among evaluators and reviewers, gender balance among experts, and various other issues related to research funding and research careers. The plan opens up a possibility of positive discrimination, with 40 % targets for the minority gender in research post appointments, and the possibility of positive discrimination in the case of candidates evaluated as having equal merit. One Academy Professorship is earmarked for Women's Studies. The Equality Plan also includes ambitious aims for the annual monitoring of gender equality development and gender equality indicators.

In **Germany**, equal opportunities for scientists are one of the statutory objectives of the German Research Foundation DFG since 2002. DFG employs different measures to meet this goal. Concerning research funding, DFG Head Office has established a working group coordinating different activities. One important first step was to facilitate the combination of research work and family. In addition, some general measures improve gender equality, e.g. junior researchers no longer need a senior partner to apply for grants. The current aims of the DFG working group on gender equality are: a higher involvement of female scientists in decision-making positions in all research programmes and boards, a more intensive support of young (female and male) scholars and a higher representation of women in the evaluation process.

The Research Council of **Norway** is responsible for gender equality in research at a national level. The Council is also responsible for Women's Studies and gender research. This responsibility is carried out in compliance with the Research Council's two main tasks, to serve in an advisory capacity in matters concerning general research policy, and to engage in strategic planning efforts that include the initiation, implementation and follow-up of research activities. At the Council, the representation of women in boards is at least 40 %. In general, this is also the case for the peer review groups, except in the natural sciences and engineering where there are often fewer women. The Council also has a Gender Equality Plan including monitoring, discussions of criteria, research leadership development and gender equality education for program coordinators.

The **Swedish** Research Council considers its main task to be the funding of research characterized by high quality and innovation, including 'potential for renewal', and that a precondition for the carrying out of this task is that the Council's decisions on research financing be free from bias. According to its mandate, issued by the national government, the Council must perform its functions in a way that promotes gender equality, i.e. equal opportunities for men and women to receive funding if their research is of the same quality. There should also be equal representation of men and women in the review panels and in the bodies that take the funding decisions, such as the scientific councils. The Swedish Research Council's strategy for gender equality in research funding is based on the assumption that research capability can be found to the same extent in women and men. Another starting point behind the strategy is the view that research is promoted if both women and men participate and contribute with their competence and experience. Gender equality is also seen as a question of equal rights: both women and men should have the same possibility to do research and to pursue a research career.

In 2008, the **Swiss** National Science Foundation SNSF adopted the SNSF Mission Statement on Equality between Women and Men, specifying the principles of gender mainstreaming, as well as equality standards and measures in research funding and in administration. Accordingly, the SNSF is committed to gender mainstreaming and to actively undertaking 'measures to distribute opportunities equitably and to support the equal and balanced participation of women and men in all functions, on all boards and across all programmes'. In order to achieve equality, the SNSF applies targeted measures. The SNSF established a gender monitoring system, operational in autumn 2008. In 1999-2001, the SNSF established a temporary task force 'GRIPS Gender' on gender equality and the women's advancement policy of the SNFS (1999-2001). A report with recommendations was published in 2001 (cf. GRIPS Gender 2001). In 2002, a permanent SNSF Equal Opportunities Commission was created as well as a special office for Equal Opportunities (recommended by the GRIPS Gender task force). SNSF Equal Opportunities Commission and Office support and advise SNSF divisions on the implementation of gender equality measures in the field of research funding.

In the new EU member states and in a number of old ones, very few funding organisations could be identified showing active engagement in gender equality promotion. A positive exception, and also an example of bottom-up activities instead of organisational top-down activities is the National Contact Centre – Women and Science of the Sociological Institute of the Academy of Science of the **Czech Republic**. It can be characterized as a key player in the country with respect to gender issues. The Centre was founded by a group of young feminist activists under the EUPRO programme supporting international co-operation in R&D based on a grant call opened by the Ministry for 2001. It 'aims to contribute to shaping gender discourse in R&D, to shaping science policy and human resource policy in the Czech Republic, especially with respect to the position of women in science'. It has succeeded, for example, in convincing major funding organizations (Grant Agency of the Czech Republic and Academy of Sciences of the Czech Republic) to change some of its grant application criteria to facilitate reconciliation of work and private life of young researchers.

3.2. Specific actions

In addition to gender equality plans and aims for equal representation of women in decision-making bodies, funding organisations can promote gender equality by various positive action measures. These kind of specific actions or instruments related to research funding have been designed and implemented in a few countries, especially in Austria, Germany, Ireland, Netherlands, the Nordic countries, Switzerland, and the UK – the same countries in which the national key funding bodies were found to be proactive in gender equality promotion. A few work-life-balance-related measures were identified in the new member states in Central Eastern Europe and the Baltic states. The information gathered by the expert group is not exhaustive but rather serves to illustrate the variety of measures that can be used. Support for Gender Studies was not addressed in this report. The specific actions include general ones, such as encouraging women to apply in the text of the funding call, they can include targets for the proportion of women funded or positive action in case of candidates evaluated to have equal merits, they may target specific career phases or groups of researchers, or aim to facilitate work life balance in research. A few aim at institutional transformation in a dialogue with universities.

The specific actions in Europe include the following:

Encouraging women to apply in the call text

Finland, Academy of Finland: An encouragement for women to apply has been included in the general call texts of the Academy of Finland funding, including also the calls for the Academy Professor positions.

Switzerland, SNSF professorships: SNSF professorships enable junior researchers with several years of research experience to step forward in their academic careers, funding the establishment for an independent team to implement a research project. Duration of professorships is 4 years with a possible extension by a maximum of additional 2 years. Women are especially encouraged to submit applications.

Targets for proportion of women funded

Finland, the Academy of Finland: according to the Equality Plan 2005-2007 'Research Councils make every effort to ensure that the percentage of the minority gender in research post appointments is at least 40 %.' Furthermore the plan states: 'the Academy Board shall make every effort to ensure that both men and women are appointed in equal measure to Academy Professor posts, on the basis of proposals submitted by Research Councils'. Positive action is applied in case of equally qualified candidates or candidates who differ only slightly in their level of scientific qualification, in these cases 'the applicant representing the minority gender in the post group in question will have first priority for the post'. The same procedure is also applied for filling the reserve posts. These posts are always fixed-term, and they form a key part of the Academy of Finland's funding instruments for individual researchers.

Switzerland, SNSF: The SNSF has set several target values for the proportion of fellowships for female candidates: 40 % for the fellowships for prospective and advanced researchers, 35 % for the 'ambizione' fellowships and 30 % for the SNSF professorships.

Netherlands Research Council (NWO): the Innovation Research Inventive Scheme grant programme includes gender monitoring as an integral part of the funding scheme directed both at men and women, and guarantees equal success rates for women and men across the duration of the funding scheme.

Measures targeting women researchers in different career phases

Austria, national programmes: Austria has introduced some unique national programmes, targeted only at women (Charlotte Bühler Programme (1992-2005), Hertha Firnberg Programme (on commission from the Austrian government), Elise Richter Programme (since 2005). The programmes support female scientists at different stages of their careers. The Hertha Firnberg Programme aims to support women at the start of their careers. The Elise Richter Programme is targeted at female senior post-docs to enable them to apply for professorships in Austria or abroad.

Sweden, Vinnova (The Swedish Governmental Agency for Innovation Systems): The Vinnmer programme (2007-2014) promotes career development of female researchers after the postdoctoral career phase. The long-term objective is to help to increase the number of postgraduates who can become 'leaders of the future' in academia and industry. The programme aims to increase the opportunities for women postgraduates to qualify as researchers after the PhD. The programme applies to people who conduct needs-driven research within one of the operational fields of Vinnova and in co-operation between a university/college and operations in the private/public sector.

Measures facilitating work-life balance in research

Some countries and funding organizations have introduced specific actions aiming to facilitate work life balance in research. National childcare and parental leave provisions define the broader work life balance context for researchers, and they vary across Europe. Regardless of the context, one major challenge especially in women's research careers is how to combine parenthood with a research career, and concerning fixed-term funding or mobility demands. Several funding organizations address this question and have introduced different measures, but in this report it is not possible to give a detailed European overview of these. Instead some innovative work-life-balance measures are presented, which target women who have had career breaks to encourage them to return to research (and also more broadly researchers who have for various reasons had a career break), and some which provide additional assistance for international mobility. These measures include:

Finland, Academy of Finland: for grants for research training and research abroad and research mobility: if the researcher has under-age dependents, the full (monthly) grant paid can be raised by a maximum 20 %.

Ireland, Science Foundation Ireland: Part of a larger programme, launched to address the under-representation of women in Irish Science in 2005, the SFI Principal Investigator Career Advancement Award (PICA) was open to any researchers (male and female) who had taken a career break for childcare. Funding was available to EUR 200,000 per annum for up to three years. SFI announced 10 PICA Awards in 2006, all to women. Currently PICA awards support outstanding researchers returning to active research after a prolonged absence, and the programme is integrated into the SFI Principal Investigator (PI) programme. Applicants must be eligible under all of the standard PI criteria, and in addition, must fall into one of the following categories:

- permanent or contract academic staff who have taken 18 or more consecutive weeks of eligible leave from their academic career (since a given date), and have since returned to work;
- permanent or contract academic staff who have returned to an academic research position (since a given date), having worked for a minimum of 2 years in a science or engineering-related industry.

Eligible leave includes: Statutory maternity, adoptive, parental leave; carer's leave; long-term medical illness leave and unpaid leave for reasons of maternity, adoptive, parental, carer or long-term medical illness. Applicants funded under the PICA criteria are considered as SFI Principal Investigators, with all of the rights and responsibilities of an SFI Principal Investigator. PI awards, and hence PICA awards, may range from EUR 100,000 to EUR 1 million direct costs per year and may be up to 5 years in duration. The PICA award is a one-off career advancement award.

Switzerland, SNSF Marie Heim-Vögtlin subsidies are aimed for doctoral and postdoctoral female candidates who are or were forced to interrupt (or reduce) their research activities due to family obligations or a change of residence as a result of their partner's career development. In SNSF mobility grants the amount awarded takes into account personal details, family obligations, and cost of living in the host country.

UK, Daphne Jackson Trust: Professor Daphne Jackson provided funding to the Daphne Jackson Trust fellowship scheme to enable women to return to research work in science and technology after career breaks.

Institutional gender equality promotion grants

Two countries, Ireland and Netherlands, have or had particularly ambitious grants, aiming for institutional transformation rather than just support for individuals.

Ireland, Science Foundation Ireland: the SFI Institute Development Award was part of a larger scheme supporting women in science and technological research in Ireland, with EUR 4.9 million total investment. Designed after the model of the United States National Science Foundation ADVANCE programmes, these grants aimed to support institutional change in the awarded Irish universities and enhance the participation of women in science and engineering research activities and research management through the establishment of long-term sustainable initiatives. Completion of a self-assessment exercise, funded under the SFI Institute Planning Grant award, was a prerequisite for application to the Institute Development Award. SFI awarded eleven Institute Planning Grants in June 2005. This provided the institutions a 12-month pilot funding to develop the opportunity to seed long-term sustainable initiatives in this area. Finally, the SFI awarded the Institute Development Award to three universities in 2006, with a total budget of EUR 503,000. The awarded proposals were identified by an international evaluation panel as having the potential to significantly change the research culture and successfully advance the opportunities of women in research and management in science and engineering. SFI has no plans at this stage to have further calls under this element of the programme.

The **Dutch** special measures and funding to promote women in research include many unique elements in a European context, such as coupling research funding with incentives directed to universities and research institutes. This kind of comprehensive career promotion approach, including a dialogue between the funding organisation and universities, is rare in the European context. This is why they are presented here in more detail.

Dutch Research Council NWO funding scheme Aspasia to increase the number of women senior lecturers (associate professors) was launched in 1999. It was targeting women only. The target group was women lecturers (assistant professors) who could apply for a 4-year PhD project or a 2-year postdoctoral project and additional research costs to a maximum EUR 11,000 per research trainee or postdoc year. The university took financial responsibility for the lecturer's promotion to senior lecturer and for the senior lecturer candidate's research, including facilities. Each proposal submitted to the NWO therefore had to be supported by the university Board involved. The promotion to senior lecturer was initiated for five years. After this time, the researcher was evaluated. With a positive review, the position could become tenure.

The programme improved the number of female senior lecturers (associate professors) in the country. In 2000 NWO approved 30 applications, in 2002 another 40. Although the budget was extended, there were about the same number of applications, which were evaluated as 'good' but left without funding from NWO. Therefore, NWO stimulated the Dutch universities to grant and appoint these positively evaluated researchers whom NWO could not grant because of the limited budget. The universities took up this opportunity in large numbers. As a result, with the joint effort of NWO and the universities a total of 146 women were appointed as senior lecturers for the next five years. The proportion of female senior lecturers in the Netherlands increased from 9.4 % to 11.8 % in 1999-2001 and to 14.4 % after the second funding round.

The Aspasia programme was reviewed in 2003. Female applicants were very enthusiastic because of the high quality selection process including peer review. After extensive discussions with researchers and universities, Aspasia was continued, but in a different setup to avoid giving their awardees a negative and discriminating image. NWO's separate programmes targeting only women tended to raise a discussion (initiated by both men and women) questioning the quality of the selection process, despite the fact that normal peer review was applied. So, since 2005 the new Aspasia programme combined the Aspasia grant with another funding instrument. Aspasia grants (worth EUR 100,000) are now available for university Executive Boards, if they promote successful female applicants for Vidi and Vici research funding grants to senior lecturer (assistant professor) or professorial level within a year of the award of the grant. Over the past few years 33 women were promoted to senior lecturer, 4 were promoted to professor.

The Athena programme was designed in 2007 to target natural and technological sciences, where women are heavily underrepresented in the professoriate. The premium is granted to female researchers who have been awarded a postdoctoral Veni subsidy from the NWO Division for Chemical Sciences and who during the course of their postdoctoral project receive a tenured appointment as assistant professor at a university or a comparable position at a research institute. The Athena premium is worth EUR 100,000 and is granted to the laureate for a maximum period of three years. Other similar programmes (Meervoud and Fom/v) support women in natural and physical sciences.

The Netherlands has a long history of migration and Dutch society is often described as a melting pot of cultures. Today ethnic minorities represent an important group in Dutch society, struggling to be properly recognised. Over the past few years the number of graduate students of these ethnic minorities rapidly increased, but they remain very underrepresented in academia, wasting talent. The Mosaic programme of the NWO aims at attracting more ethnic minority graduates into academic research in the hopes that successful candidates will continue to work in academic research in the Netherlands and will act as role models. For each round, NWO and the ministry each make EUR 2 million available, sufficient to fund 22 new doctoral research posts. In addition, it is expected that the universities themselves will offer extra posts to outstanding candidates. A remarkable outcome of the Mosaic programme was that women have been doing better than men. Women are already a majority among the applicants and their success rates are higher than men's.

3.3. Monitoring systems

The existence of an efficient system for monitoring the outcomes of research funding programmes is an essential element of transparency. Regular gender monitoring enables funding organisations to effectively identify and become aware of potential gender bias or other gender related problems in the funding system or parts of it. Gender monitoring helps to direct action where it is most needed. Indeed, it is one tool by which the funding organisations can demonstrate that the funding process really functions fairly and equally for both women and men. This may encourage more women to apply for funding. Lack of gender monitoring, or monitoring only internally but not publishing the results, leaves the organisation open for suspicion in this respect.

3.3.1. Availability of data

Data availability by gender is the first cornerstone of gender monitoring. Availability of data on research funding organisations, their gatekeepers and funding outcomes by gender varies across Europe (EC, 2006; EC, 2008a and b). In a few countries, these data are collected and published on a regular basis by the funding organisations and are easily accessible through their websites and annual reports. In others, data might well be collected for internal use but made available to outsiders only by specific request. In some cases the expert group observed that obtaining gender data could be difficult. Data on names of key decision-makers are normally available on the websites of the organisations, making head counts by gender possible. Gender data on different subordinate bodies, panels and experts participating in the evaluation process were often found to be more difficult to obtain and sometimes completely unavailable, and the availability of gender data on success rates in general or by discipline varied. Yet, most countries use electronic application procedures, which makes gender data gathering almost effortless – if the necessary information has been requested in the application form.

We obtained data from most countries from which they were missing from the previous major EU reports (EC, 2006 and EC, 2008a). However, one also observed that some countries, which had produced data for previous EU reports, failed to produce current data when this was requested by us. This indicates that, in fact, no regular monitoring is taking place and the data then obtained were a result of a single one-off study.

The expert group concluded that data on funding success by gender were not available at all from only a few of the 33 countries covered: French-speaking Belgium, Croatia, Cyprus, the Czech Republic, Greece, and Hungary. From Israel only data from 2000 was available, aggregated by discipline. Data obtained on the UK research councils is very partial. Data are not disaggregated by discipline in Austria, Luxembourg and Malta. Notably, all these except Austria, Belgium and UK belong to countries with larger overall societal gender gap.

3.3.2. Specific monitoring exercises

Only in a few countries have extensive gender monitoring exercises been conducted by funding organisations themselves. Some of these are presented in detail in the following section. In the Swedish case, there is strong governmental pressure and demand for this kind of monitoring, as explained earlier. Monitoring exercises of some major private funding bodies, such as EMBO, Boehringer Ingelheim Fund, and Wellcome Trust were mentioned in section 1.2. Such in-depth studies are particularly important to allow a better understanding of the way in which the funding procedures favour or not one gender but they are also a way of evaluating the general quality of the procedures of the funding organisation. In a few cases, such as in the Dutch NWO, gender monitoring has been made an integral element of a funding instrument.

In **Austria**, several evaluation studies on gender and science have been sponsored by the research ministry (BMWF), for example on extra-university research institutions (Forschung Austria 2004: Gender Booklet). A highly detailed report on gender budgeting in five research programmes, combining 125 single projects with a total budget of around EUR 66 million was published in 2007 (Genderbüro 2007). The study demonstrates significant differences regarding gender aspects by disciplinary orientation of the programmes. Overall, a higher political awareness of gender aspects is reflected in a moderately positive development of several qualitative and quantitative indicators. According to the report, the largest programme in genetic research (GEN-AU) has, however, a further need of specific gender action.

The Austrian research foundation FWF publishes basic information on gender specific success rates and evaluates the success rates in extra studies. In 2004, an impact analysis on FWF projects was conducted (Streicher et al., 2004), also considering the sex of the applicants in FWF projects. A multivariate analysis showed that gender (as a variable) does not co-vary with chances of being funded (Streicher et al., 2004). The FWF gender department updates its website information and summarises important results of studies and statistical trends. However, the report on 'gender and excellence' states the gender department of FWF does not have sufficient funding to analyse important questions on access of women to the FWF and on the gender specific impact of funding decisions (Schacherl et al., 2007: 93). The Austrian government recently supported a comprehensive study on gender and excellence (Schacherl et al., 2007). This report is based on a multi-faceted methodological enterprise combining qualitative and quantitative data and focusing on different aspects of the relationship between the promotion of excellence and the representation of women. Research funding was covered in one chapter.

The evaluation process has also been studied on the basis of a survey among applicants (FWF/Spectra, 2004). The international peer review used by the FWF seems to be accepted by a broad majority of researchers. 71 % of respondents agree that it is adequate and 61 % support the administrative organization. Compared to other countries where similar studies have been conducted, this indicates a rather high acceptance among the scientific community. However, the FWF reports that some concerns on lack of transparency have led to rejections (FWF/Spectra, 2004: 15). The selection of reviewers is criticised by a minority of applicants. They complain about insufficient expertise and anonymity. In general, however, and in comparison to other countries, the evaluation process meets high quality standards. Recruiting international reviewers, checks and balances within the administrative unit (a 'four eyes' principle, meaning that two people of the administrative staff process the applications), and a thorough ex-post evaluation of the projects are positive examples of a research funding system that tries to raise quality and equity.

In **Germany**, the German Research Foundation DFG regularly monitors and publishes success rates by gender and conducts extensive studies on gender dynamics in funding, some results of which are discussed in more detail further in this report (see section 4.1.). An independent monitoring institute will be established.

In **Sweden**, the Swedish Research Council, which was created in 2001, conducted a thorough gender assessment of the first years of its activities (Jacobsson, Glynn and Lundberg, 2007; Gustafsson, Jacobsson and Glynn 2007). The gender report explored the representation of women and men in review panels and other bodies, application behaviour of women and men, success rates by gender and size of grants in different funding forms. Some more detailed information from this monitoring is presented in section 5.2.1. To sum up, the report found certain discrepancies in success rates of women and men in the period 2003-2005. For fellowships for postdoctoral research periods abroad, women had a lower success rate than men. In medical research, women were less successful than men in all types of grants except assistant professorships.

The **Swiss** SNSF has commissioned a major study on gender and research funding (GEFO). A pilot study was conducted in 2004, and the main study launched in 2006. The study has two objectives: one is the quantification and description of gender-specific losses (the so-called leaky pipeline) in the scientific careers of junior scientists. The other is the analysis of the significance of both internal and external factors in science on gender-specific loss rates, with the role of the SNSF's research funding policy as a topic of special interest. The study will be used by the SNSF as a factual planning basis for its gender-equality policy and equal opportunity measures in research funding.

The results of these SNSF studies indicate no significant gender differences in application behaviour, success rates and amount of money granted - after controlling for other factors like age, cohort, disciplinary area, migration etc. Thus, the report of the 2006-08 study concludes that up to five years after the doctorate, women submit applications for individual and project funding to the SNSF and other research funding institutions just as frequently as men. Amongst those researchers who between 2002 and 2006 submitted applications to the SNSF for the first time for project funding or a SNSF professorship, women did not submit fewer applications than men, and they asked for equal sums and had the same chances of success. Furthermore, there are no indications that women attempt to finance their careers more frequently with the acquisition of third-party funding like stipends or research grants, which would be an index of their weaker integration into higher education employment, nor could the study find evidence that women researchers are less well informed about the possibilities of research funding, that they show greater reluctance to apply for funding, or that they experience the SNSF as less accessible and less supportive than men do (cf. Leemann and Stutz, 2008). The analyses, however, showed gender-specific 'leaky pipelines' and disintegration processes ('cooling out'), i.e. disproportionately large drop-out rates for women in the academic system in comparison to men. These processes already start with the transition from the MA to the doctoral level and stretch across the career path up to the postdoctoral phase.

Lack of monitoring studies or published monitoring data in many national settings prompted several members of the expert group to conduct gender-monitoring studies of their own. In **Italy**, research funding is generally not monitored by gender. Publicly available data sources on the Ministry of University and Research website and the official documents do not include gender amongst the variables to be analysed. A gender monitoring study on Italian research grants was conducted for this report by the expert group member Rossella Palomba, who obtained data broken down by gender for the years 2006, 2005 and 2004 and carried out statistical elaborations based on the names of the Principal Investigators who received the grant for the period 2003-2006. Concerning the success rates by gender, she was able to calculate them for the years 2006, 2005 and 2004 on the basis of the data delivered by the Ministry of University and Research (MIUR) upon request.

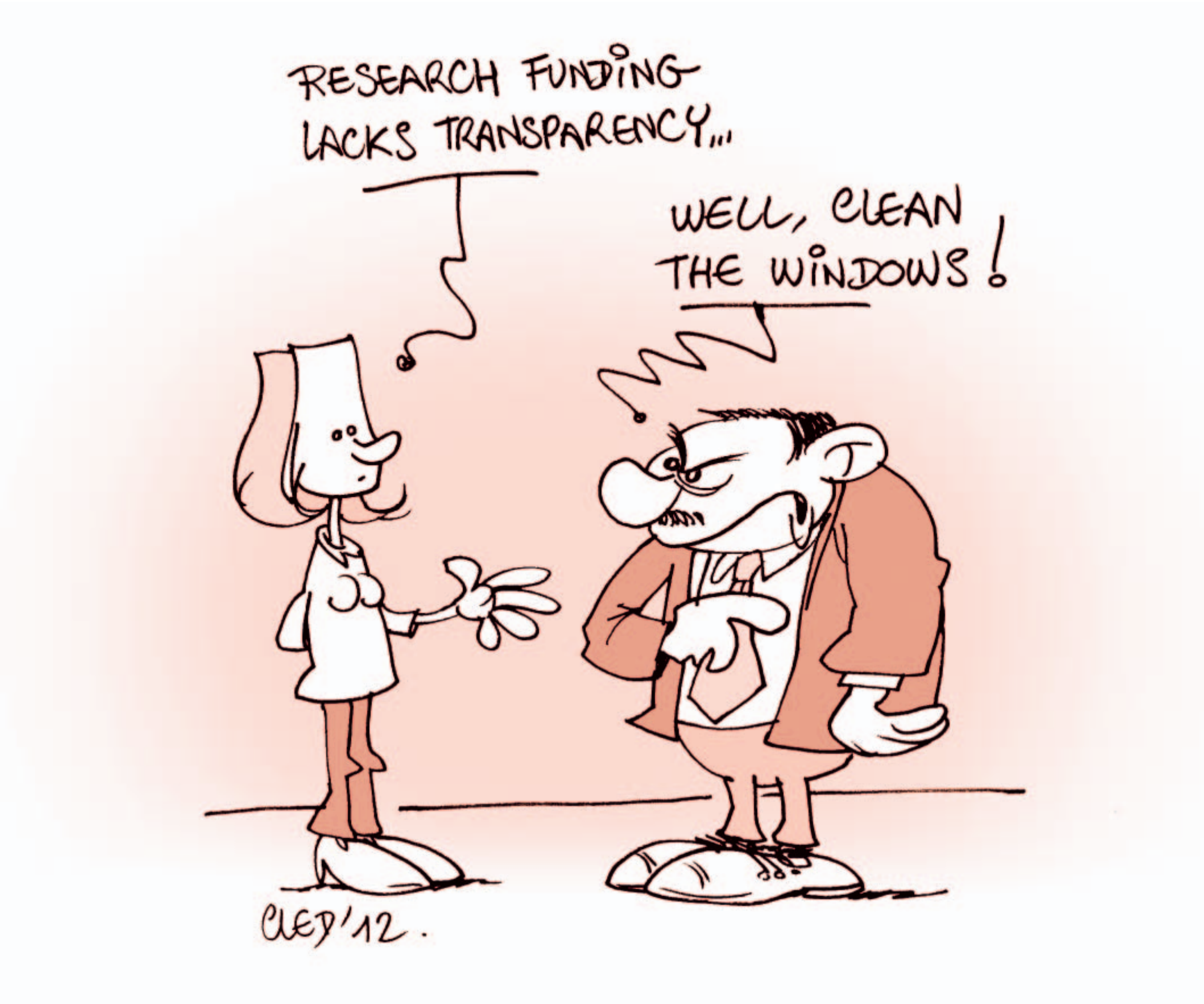
In **Poland**, gender is not taken into account in the decision making of grant allocation, and the gender of the applicants and grant recipients is not monitored. For this expert report, the Polish expert group member Renata Siemienska obtained extensive data from the Polish Ministry of Science and Higher Education on research grant applications and awards by gender for the period 2005-2007, and conducted her own calculations on the application and success rates by grant type and discipline. She also obtained data on the boards awarding grants by gender and discipline.

3.4. Transparency of the funding systems

An ideal type of transparent funding system could be described as follows. A transparent funding process means public and easy access to key information on the process before, during and after the application process. Calls for applications are public, and information on eligibility rules, specific conditions and criteria for different funding forms, evaluation criteria and evaluation procedure are easily and publicly available. Funding decisions, including names of recipients, amounts of funding and application and success rates by gender are made publicly available. Transparency is increased by the evaluation feedback being made available for the applicants, instead of communicating the positive or negative funding decision only. Furthermore, transparency is increased by the existence of real complaint and grievance procedures.

Process transparency also concerns the recruitment of gatekeepers of funding: in an ideal situation, the procedures and criteria by which the committee or board members, evaluators and reviewers are recruited are explicit and are made public. Broad consultation among stakeholders or processes of election in selecting the committee or board members, evaluators and reviewers is conducted. International evaluators and reviewers are used in addition to the national ones, which is especially important to prevent nepotism. Applicants can name a few persons who should not be requested to review the application. Name lists of evaluators and reviewers are made available at least annually, and statistics of evaluators and reviewers by gender and discipline are regularly monitored and made available. Codes of conduct are set up and communicated to those involved in the funding process. They include clear practices by which conflicts of interest are avoided and nepotism is addressed and prevented. Training on the evaluation process is organised for committee and board members, evaluators and reviewers, as well as administrative staff of the funding organisation who participate in processing the applications. This training includes relevant gender issues.

The transparency of a funding organisation can be assessed from the perspective of the applicants and potential applicants, and from the perspective of policy-makers and decision-makers, or refer to how the general public can evaluate the functioning and fairness of the system from the outside. It includes both the transparency of



the funding process and the transparency of the outcomes of funding decisions. If funding organisations claim to be transparent but ignore gender aspects of the funding processes and funding outcomes, they are in fact opaque. Transparency is especially important for groups who may know the system less well, including (many) women, who are more seldom than their male colleagues supported and advised by a mentor or powerful colleague networks (see, e.g., Zuckerman et al., 1991; Sonnert and Holton, 1995; Leemann and Stutz, 2008). Transparency of the funding system will make it easier for them to navigate successfully in the complex research funding landscape, and secondly, transparency may encourage them to participate and apply for funding.

The national context and traditions create the macro framework influencing transparency of public research funding. However, some funding organisations have adopted good transparent practices even if the political decision-makers and legislation do not actively demand this. In any case, political will by the national governments to make public organisations, including public funding organisations, accountable on their performance from a gender perspective is of crucial importance. Legislation related to the freedom of information obviously plays a significant role. Increasing international co-operation between research funding organisations and harmonization of European legislation may contribute in distributing good transparency practices across Europe.

Box 1. High transparency on recruitment procedures of evaluators and reviewers

The nomination and selection procedures for evaluator candidates are explained in detail on the website of the UK Engineering and Physical Science Research Council EPSRC. Gender balance is also mentioned. However, College members are listed by name and initial only and their gender distribution is not given.

'EPSRC relies on peer review to evaluate research proposals and fellowship applications, and to assess final reports. We select most reviewers and members of prioritisation panels from a College of peer reviewers that is nominated by the research community. The current College of around 4000 people runs for a term of four years from 1 January 2006.

How Members were Nominated for the Current College

We invited nominations during late February and early March 2005 for the current College which was launched in January 2006. Nominations were sought from:

- All applicants for EPSRC research grants, and their co-applicants (academic and industrial), who had submitted proposals in the last three years.
- Student supervisors.
- All current College members.
- People suggested by UK Government departments, professional institutions and other organisations (including some based overseas).

In total, nearly 20,000 people were asked to each nominate up to seven people to be members of the College. Up to three of the nominations were for UK-based academics and up to two for UK-based non-academics, with the balance made up of people not based in the United Kingdom.

We asked that nominated individuals have high scientific standing and research expertise. To make sure that the College has an appropriate balance and spread of expertise, we needed to know the areas of expertise of the people nominated. We asked people to indicate between one and ten research topics that should be associated with each person they nominated. Nominations of people with multidisciplinary experience were particularly welcome.

How College Members are Selected

The 2006 College has a membership of around 4000 people, with an increased proportion from overseas organisations.

We select College members primarily by the number of nominations received for each individual. We aim to populate the College so that there is enough expertise to provide for the peer review needs in each research topic area, and to balance the College by gender, age, ethnic origin, geographic location, background (academic/non-academic) and breadth of knowledge. In addition, we also take some account of poor responders to past reviewing requests.

Current EPSRC Advanced and Senior Research Fellows are offered College membership. EPSRC Leadership Fellows will also be offered membership.

We ask College members to provide us with up to 40 subject keywords covering their expertise and knowledge. This helps us to select appropriate reviewers for effective peer review assessments.'

(http://www.epsrc.ac.uk/ResearchFunding/ReviewingProposals/College/NominationAndSelection.htm) referred November 22, 2008)

Recruitment of evaluators and reviewers

In many funding organisations, the procedure for the recruitment of evaluators and peer reviewers is not very transparent, with a few exceptions, such as the UK Engineering and Physical Science Research Council (see box 1).

Pre-application information

Web-based communication systems have enhanced the possibilities to increase public accessibility and transparency of funding information. Practically every funding organisation explored for this report had a website where basic information on funding instruments, calls, and criteria of funding could be found, often both in the national language(s) and in English. Transparency in this respect can be assessed as mostly high concerning basic application information.

Some funding organisations arrange special coaching on funding for young and less experienced applicants. For example, the Dutch NWO organises Talent days (with no fee) and Talent classes (EUR 95), aimed at young researchers who want to improve their technical skills in preparing an application, writing, networking and planning so as to improve their chances in academia and in NWO procedures.

Anonymity in evaluation

The issue of anonymity of the applicants, evaluators and reviewers is complex. In most funding organisations covered by this report, anonymity is applied one-way only: the reviewers know the name of the applicant but the reviewers remain anonymous for the applicants. It is only rarely that the evaluators and reviewers do not know the name of the applicant. Usually, the assessment of the track record of the applicant, including the publication profile, is part of the evaluation of the application, making it difficult to blind the name of the applicant. When the name of the applicant is known her/his gender is usually also revealed to the evaluator.

More variation was found in whether the transparency is extended the other way round, to the names of the evaluators of individual funding applications. Usually the applicants cannot influence the choice of evaluators and reviewers of their application, with a few exceptions, such as Ireland and France, where it is possible to exclude some reviewers by naming them in the application. In some funding organisations, such as the Academy of Finland, names of the expert panel members evaluating a given application are disclosed to the applicant at request but not in case an application has been reviewed by one individual reviewer only. In the Dutch NWO, reviewers always remain anonymous, during the selection process and afterwards. Committee members remain anonymous during the first part of the selection process, but applicants get their names before being interviewed. After the final decision, the names of the reviewers are often available on request and some NWO Divisions publish the names of their committee members in their annual reports.

Feedback to the applicants

Communicating to the applicants the reasons behind a positive or negative funding decision is also part of transparency of the funding process. Whether the applicants receive feedback on their applications and in what extent varies somewhat, and this information was not obtained from all countries covered. Usually the feedback does not include the name of the reviewers.

Right to complain

Only in a few countries were regular complaint and grievance procedures reported to exist. These were seldom integrated in general transparency monitoring. In the Grant Agency of the **Czech Republic**, the applicant can submit a complaint to an internal Control Board within 15 days after receiving the funding decision. This Board elaborates a position for every complaint and submits it to the applicant and to the Presidium of the Agency, and can formulate a recommendation to the Presidium. The **Netherlands** NWO has exceptional procedures in this area: there is both a right to complain and appeal about funding decisions, and the number of appeals is monitored and used as an indictor of transparency. NWO regards the appeals procedure as an efficient method to correct misjudgements or reconsider fundamental procedural matters. It considers the number of appeals lodged, particularly those judged to be valid, as an indicator of the transparency of the procedures and their acceptance. In **Slovenia**, applicants have the right to submit an appeal within eight days from the receipt of the notification of selection results. The appeal may only concern an obvious error or violation of the selection procedure, but never the conditions and criteria for evaluating applications or the evaluation of the peers.

Codes of conduct

Codes of conduct for decision-makers and evaluators are compiled by several funding organisations, but few were reported to include gender aspects. In the **Netherlands** gender awareness of those involved in the funding process of the NWO is promoted by specific guidelines, Vademecum. This document was released in 2007 and is an internal NWO guide for all board members, policy managers and committee members to create and monitor gender awareness and try and make all selection procedures as gender-proof as possible. It includes specific instructions on criteria, eligibility, brochures (appealing texts and criteria), forms, meetings, interviews, panel members and all other aspects of the assessment procedures.

In conclusion, in most of the funding systems explored, transparency can and needs to be improved. Less attention to transparency was often found in national settings with larger overall gender gap in society. Many settings and organisations show pervasive indifference or scepticism towards gender issues. In many cases it was difficult or impossible to get access to the success rates by gender or to name lists of evaluators: organisations appeared to show little interest, if any, in gender monitoring their activities.

4. Gatekeepers and gatekeeping of research funding

Research funding decision-making includes numerous gatekeepers at macro, meso and micro level. A gatekeeper can simply be defined as a person who controls access to something or somebody. Robert K. Merton (1973) called gatekeeper the 'fourth major role' of a scientist, in addition to that of researcher, teacher and administrator, and argued that gatekeepers affect contemporary science in every aspect. This section discusses the gender composition and recruitment of gatekeepers of research funding in different national settings, and highlights various gatekeeping processes related to research funding, such as evaluation processes, criteria, and eligibility.

Gatekeepers of research funding are understood here broadly: they include members of national science and technology councils, funding organisation directors and managers, funding organisation board members, research council and sub-council members, staff members of funding organisations, individuals involved in evaluation committees and panels, and reviewers.

Women are particularly under-represented among academic gatekeepers and leading positions in science and science policy organisations. Gatekeepers of research funding consist to a large extent of middle-aged male academics, concluded the ETAN report (EC, 2000) nearly ten years ago. As shown below, the situation has not fundamentally changed.

Lack of gender balance among gatekeepers of research has profound consequences for many reasons. It may have an impact on the contents of decisions, on the image of the organisation, on gender awareness or lack thereof in the organisation but also on academic careers of women and men. Gatekeepers are in a key position to influence the definition, evaluation and development of scientific excellence. Gatekeeping processes can control or influence the entry or access to an arena, allocation of resources and information flows, setting of standards, development of the field or the agenda, or the external imago of that arena. The double role of gatekeeping is noteworthy: gatekeeping can function as exclusion and control, on the one hand, but also facilitate and provide opportunities, on the other (Husu, 2004).

Increasing the proportion of women among gatekeepers of research funding does not, according to the current empirical evidence, necessarily or automatically lead to higher success rates for women applicants. However, the positive impact of more equal representation among gatekeepers on women's participation in research may be more indirect: it demonstrates that women are full members of the system, it increases gender awareness inside the organisation, it offers women researchers more opportunities to learn how the funding and evaluation system works, seen from inside, and allows an overview on the level of current frontline research against which they can measure their own. It also provides opportunities to become integrated in important networks.

4.1. Gatekeepers of research funding

She Figures 2006 (EC, 2006) data on scientific boards, concerning the year 2004, presented a composite figure for the proportion of female gatekeepers in each country, aggregating disciplinary fields and including various organisations. These figures can be seen as a rough estimate of women's overall representation in scientific boards. Women were seriously underrepresented in the scientific boards in most EU countries. Only in Finland, Sweden and Norway did women constitute more than 40 % of the boards and only in the UK, Bulgaria and Denmark above 30 %.

Recruitment of gatekeepers varies across countries both in method and in transparency. The highest national level gatekeepers of research funding, the national science and technology committees or equivalent, are usually appointed by the national government and often chaired by the Prime Minister or other government ministers. National research council or national research foundation board members or equivalents are recruited by various methods: they can be directly appointed by the government from the representatives put forward by relevant stakeholder organisations (universities, science academies, research institutes, business sector); appointed by the relevant ministry after consultations with the research community; members can be selected by the research community through elections; or a mix of these procedures can be applied.

The boards of funding organisations often serve as final decision-making bodies, and allocate the evaluation of applications to subcommittees, evaluation panels, and external peer reviewers. However, the role of the boards varies somewhat across Europe and the boundaries between decision-making and evaluation can sometimes be quite blurred. In some countries, the boards also participate in the evaluation process itself in some funding schemes or concerning some funding instruments, for example, by short-listing of candidates to be subsequently peer reviewed externally, whereas in others, the boards only make the final funding decisions on the basis of the recommendations of evaluation panels and/or external reviewers.

Data on the gender composition of the board members of national science policy committees and members of the boards and subdivisions of the funding organisations was easiest to obtain. There was variation across countries on availability of and access to gender data on evaluators and reviewers. These data were only rarely publicly available and monitored by the funding organisations, and were in most cases obtained on request from the funding organisations.

Evaluators and reviewers are key gatekeepers because they conduct the peer reviews through which excellence in research funding is defined. How they are recruited, and what criteria are used in recruitment and selection is much less clear. In a few countries, like in Italy, the Ministry directly appoints the members of the evaluation committees. The research council members and research council staff play in many cases a key role in recruiting evaluators. In some countries, like Sweden and Finland, the funding organisations have set targets for equal representation of women among the evaluators, but these are not always met. In the UK, many research councils use extensive consultation among stakeholders when recruiting evaluators (see Box 2) and take also into account gender balance. Evaluator pools or 'colleges' are developed by some funding agencies; some agencies exchange evaluator information with each other, and a few agencies have obtained access to the European Commission evaluator pool. International evaluators are increasingly used.

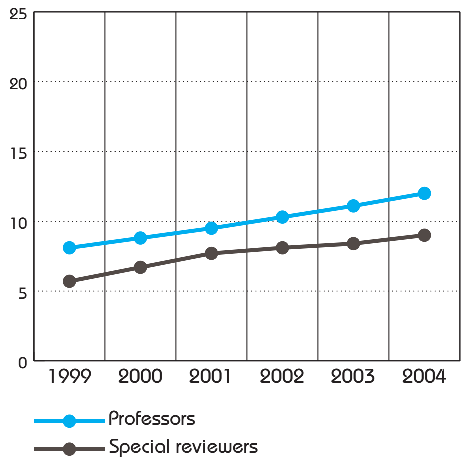
Box 2. The gains of being a gatekeeper

'I was once a quota woman, as a member of the Research Council, and it was really a top experience. You got access to see it from the inside, the criteria of funding and overall, a lot about the evaluation of science, and the rules of the game, which you would have otherwise not seen at all. So this might have been a way I got a little into the networks which had until then been solely male. (…) Some of the fellow members of the Research Council really opened my mind, and I was taken completely seriously so there was no problem in that. There were some really fine people. (…) Through being a member of the Research Council I got access to see the mechanisms of research funding. There were also people who appreciated that there were women among decision-makers. I was a quota woman there, and after that there have been more women. I could bring my own networks to the expert pool, it was very important and I think this could be utilised much more… when we get the first women along then gradually in the next recruitments you can take also (more) women into account. If they are men they usually have male networks, the system does not renew, but if there are women among, even if only the amount of the quota, it helps. It is a good mechanism for a transition phase. I have only good experiences on that, it was a brilliant thing in my career, an extra bonus.'

A female professor from a male-dominated discipline, Finland, served as a Research Council member. Interviewed for the FP6 PROMETEA project by Liisa Husu and Paula Koskinen, University of Helsinki.

Very few studies have been conducted on the evaluators and the evaluation process generally, or from gender perspective. A recent German study (Hinz, Findeisen, and Auspurg, 2008) looked at the involvement of women in the DFG peer review system. Between 1999 and 2001, almost 10,000 scientists wrote reviews for the DFG, between 2002 and 2004 this rose to almost 11,000 (DFG 2003, 2006). In the majority of cases, reviewers have the status of professors, although this is not always required. Figure 1 compares the trend in the proportion of women relative to the total number of DFG peer reviewers to the trend in the proportion of female professors at German universities.

Figure 1:
The trend in the proportion of women among special reviewers in the German DFG Individual Grants Programme and among professors (1999-2004, in percent)



Source: DFG, Hinz/Findeisen/Auspurg (2008)

The proportion of women professors in Germany is low but has steadily increased over time. This trend is mirrored by the proportion of women among peer reviewers, although it does not reach the same level as that of university professors. Whereas the proportion of women among DFG peer reviewers had reached 9 % by 2004, the figure for the reference group in the same year was 13.6 %. Even judged on this basis, women are underrepresented amongst DFG peer reviewers. Probably, this difference is partly explained by the senior status of reviewers. Hinz et al. (2008) show that reviewers are on average five years older than applicants. Furthermore, female reviewers are on average five years younger than male reviewers.

The members of the Review Boards are elected by peers. Every four years, people employed at German universities and research institutes and holding doctoral degrees have the right to vote for representatives on Review Boards. Candidates are nominated by professional scientific organisations. Analyses of electoral votes show that the representation of female scientists is more dependent on their nomination by their associations than on voters' preferences. In scientific disciplines with female candidates, the female scientists do not have lower chances to be elected as members of the Review Boards. The last election took place in late 2007, and the former president of the DFG argued in favour of a quota for female candidates. In fact, the proportion of women as elected members of Review Boards increased from 12 % to nearly 17 %.

An overview of the current representation of women on different scientific boards in Germany is given in Table 2. It is published on the website of the DFG with a detailed description of tasks.

Table 2.
Representation of female scientists on boards of the German DFG (2007)

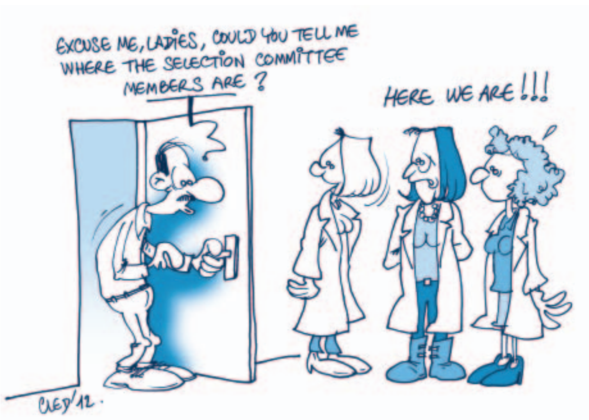
	Total	Total women	% women
Executive committee	9	2	22.2
Senate	38	9	23.6
Senate's committee for special research units	36	6	16.6
Senate's committee for graduate schools	32	12	37.5
Review Boards	594	99	16.8
Reviews	21 037	2 300	10.9
Reviewers	9 488	1 135	12.0

Source: DFG

Table 2 indicates that with the exception of the review system the proportion of female scientists is above their representation among full professors.

4.2. Gatekeepers by gender in different national settings

In the following section, gender dynamics among funding gatekeepers is discussed by grouping countries according to the proportions of women among gatekeepers in the light of She Figures 2006 data on scientific boards. She Figures 2006 did not include data on Austria, Greece, Israel, Luxembourg, Malta, Portugal, Romania, Spain, and Turkey, and Belgian data concerned only the Flemish community. Furthermore, She Figures data on scientific boards included several types of bodies, not only funding boards. Here public research funding organisations are the main focus. However, for some countries, detailed data on the gender distribution of national science and research policy committees are also presented. These bodies can be seen as macro level national gatekeepers of research funding, and their gender composition is of particular interest in those countries, which do not have any national level gender related targets or quotas for public committees.



Countries with over 30 % representation of women in scientific boards

Bulgaria, Finland, Denmark, Norway, Sweden, and the UK are, according to She Figures 2006, the only countries where the proportion of women is over 30 % in scientific boards. What is common to all, with the exception of Bulgaria, is that the funding organisations are engaged in equality planning, and gender mainstreaming has been adopted as a policy strategy. All countries have more than EU-average women in higher education research and the overall gender gap is smaller than EU-average, except in Bulgaria.

In **Bulgaria**, seven Permanent Expert Panels – called Scientific Expert Commissions in local terms – are affiliated to the Bulgarian National Science Fund Executive Council with duties to organise the evaluation round of each Call and to evaluate and control the performance quality of the concluded contracts. Their gender composition is presented in Table 3. Overall, the gender balance among expert panels is good, but women are missing from the technical science panel, and the mathematics and natural science panels have one female expert only.

Table 3.

Bulgarian National Science Fund permanent expert panel members by gender in 2008

Expert Panel	Males	Females
Mathematics and Informatics	6	1
Natural Sciences	6	1
Biology	1	6
Medicine	3	4
Agricultural Sciences	3	4
Technical Sciences	7	0
Social Sciences and Humanities	2	5
Total	**28**	**21 (43 %)**

Source: website of the Bulgarian National Science Fund

In **Finland**, the decision-making bodies of the Academy of Finland follow the Gender Equality Act stipulation on public boards, demanding at least 40 % representation of women. The Research Councils and the Board of the organisation, appointed for a three-year term by the national government, have reached gender balance as a result (Table 4).

Table 4.
Gender composition of the Academy of Finland Board and Research Councils 2007-2009

	Chair	Female members	Male members
Board of the Academy of Finland	Male	3	3
Research Council for Biosciences and Environment	Male	5	5
Research Council for Culture and Society	Female	5	5
Research Council for Health Sciences	Male	6	4
Research Council for Natural Sciences and Engineering	Male	5	5

Source: Academy of Finland

The Academy of Finland Gender Equality Plan 2005-2007 includes the goal for equal representation of women and men among the evaluators of funding applications. Members and chairs of research councils propose names of evaluators, as well as Academy administrators, but there is no general pool of reviewers. According to the Equality Plan 'Research Councils shall appoint equal numbers of men and women to serve as experts in evaluations. Where possible, women and men should have at least a 40 % cent representation in expert panels'. Both national and international evaluators are used.

The issue of gender imbalance among evaluators and reviewers was taken up in a gender monitoring report in 1997 and its follow-up report (AoF, 1998 (8), 2000). In 1996 and 1999 (figures in brackets) the proportions of women among reviewers used by the research councils were as follows: Culture and Society 23 % (27 %), Natural Science and Engineering 8 % (5 %), Health 16 % (44 %) and Environment and Natural Resources 17 % (16 %) (AoF, 1998, 2000). The goal of equal representation was introduced in the first Academy of Finland Equality Plan in 2000. By 2005 and 2006, the proportion of women among evaluators was clearly higher. It was at the target level in the RC for Culture and Society and Health Sciences but continued to be very low in the RC for Natural Sciences and Engineering, in which it had not increased since the late 1990s levels (Table 5). The target of the Equality Plan is thus not fully reached, and it is noteworthy that this is especially the case in the RC for Natural Sciences and Engineering, which allocates over 50 % of all Academy funding. Data on evaluators by gender are collected and monitored internally but not regularly published in annual reports or the Academy website, and have to be specifically requested.

Table 5.
Academy of Finland, evaluators by gender and RC 2005-2006*

Research Council	2005		2006	
	% women (n)	Total	% women (n)	Total
Biosciences and Environment	27 %	126	25 %	118
Culture and Society	30 %	380	42 %	404
Natural Sciences and Technology	11 %	196	6 %	255
Health Sciences	33 %	103	38 %	109
Total	**25 % (202)**	**805**	**28 % (256)**	**886**

** Evaluators on applications for Academy fellow and postdoctoral posts and general research project funding, for 2005 RC culture and society also on senior researchers' one year grants. Source: Academy of Finland research funding database.*

(8) The English language version of the original report published in 1997.

Iceland has improved the gender balance on its scientific boards compared to the situation described by She Figures 2006. The Board of the Icelandic Research Fund, the most important competitive fund for academic research, is appointed by the Minister of Education, Science and Culture for three year terms. Four evaluation panels, appointed by the national Science and Technology Policy Committee for two-year terms, perform the evaluation of applications. The governing Board is gender balanced, the Chair for 2006-2009 is a woman, and evaluator panels are also gender balanced as a whole, with a male majority in the evaluation group on physics and engineering and a female majority in the social sciences and humanities (Table 6).

Table 6.
Gender composition of the Icelandic Research Fund evaluation panels

	Physics and Engineering Sciences			Natural and Environmental Sciences		
	Panel members		Chair	Panel members		Chair
	Male	Female		Male	Female	
2003-2004	6	1	Male	4	3	Female
2005-2006	5	2	Male	4	3	Female
2007-2009	5	2	Male	3	4	Female
	Health and Life Sciences			**Humanities and Social Sciences**		
	Panel members		Chair	Panel members		Chair
	Male	Female		Male	Female	
2003-2004	4	3	Male	4	3	Male
2005-2006	4	3	Male	4	3	Male
2007-2009	3	4	Male	2	5	Female

Source: Icelandic Research Fund

In **Sweden**, the peer review groups at the Swedish Research Council are selected by the boards of each research council, and generally have an equal representation of men and women. The gender distribution of the peer review groups must be included in the research council's annual report to the government. However, the peer review groups in natural and engineering sciences have a lower representation of women, 27 %, reported to be due to the low proportion of women, 20 % in 2006, among university researchers, with a doctorate, in these fields. International reviewers are used, but most are national. No rank is required, but most are (full) professors.

Countries with 20-30% of women in scientific boards

A rather heterogeneous group of countries, including Estonia, France, Hungary, Latvia, Netherlands, Slovenia, and Switzerland have 20-30 % women in their scientific boards according to She Figures 2006. These countries include both newly active countries and those in which few, if any, activities could be identified. Some have a smaller gender gap and a higher than average proportion of women in higher education research (Baltic countries except Estonia), some a smaller gender gap and a smaller than average proportion of women in HE research (France, Netherlands and Switzerland) and finally this group includes also countries with a larger gender gap and a less than average proportion of women in HE research (Slovenia and Hungary). Of countries in this group only Switzerland and Netherlands engage actively in gender equality promotion in research.

In **Estonia**, the proportion of women among researchers is high, 43 %, but women are heavily under-represented among gatekeepers. Institutions advising the Ministry of Education and Research in research issues include the Estonian Academy of Sciences and amongst its 57 full members (top level Estonian researchers) there is only one woman, professor Ene Ergma. The situation has not changed since 2000. The situation is similar in another key advisory institution of the government on science policy, the Scientific Competence Council with nine men and no women on its Board and less than 10 % women on its nine Expert boards. The Council of the Estonian Science Foundation, which supports research projects through the allocation of grants, has six men and only one woman on its board. In the work of ESF Expert Commissions 42 members who are experts representing different research areas are involved, currently 10 (24 %) of those are women.

In **France**, according to She Figures 2006, the average proportion of women in national scientific boards was 27 % in 2004. Gender balance of the more important committees is currently poor (Table 7):

Table 7.

Gender composition of national science and research policy committees in France in 2008

Committee	members	women	% women	chair
Steering committee for the elaboration of the national strategy for research and innovation	18	2	11 %	Female
The High Council for Science and Technology	21	5	24 %	Male
The High Council for Research and Technology	44	21	48 %	Female (research minister)
The Scientific Council of CNRS	29	9	31 %	Male
Administrative Council of CNRS	23	1	4 %	Female (president of CNRS)
Academy of Science: Mathematics section	27	1	4 %	
Academy of Science: Physics section	31	2	6 %	
Academy of Science: Human Biology and Medicine	33	3	10 %	

Sources: respective organisations

The recently created Agence Nationale pour la Recherche, soon to become the main source of funding for French research, has a female director, but seven of its eight departments are led by men and its council of administration has only three women out of 14. The organisation has no scientific council but has recently created a 9 member 'council of perspective', which has no female members. Gender balance of evaluation committees and external reviewers is poor (Table 8):

In **Hungary** where the proportion of women among researchers is a third, women are poorly represented in key Research and Development gatekeeping positions according to data gathered by the expert group. She Figures 2006 reported a 20 % representation of women in scientific boards for Hungary, but those figures concerned only HSRF, the Hungarian Scientific Research Fund. Key strategic science and technology policy councils are all male (Table 9). Data on evaluators were not available.

Table 8.

Proportion of women among ANR experts and in ANR committees 2007

ANR 2007	Female experts	Women on evaluation committees
Total	**17 %**	**19 %**
Social Sciences and Humanities	26 %	24 %
Non thematic and transversal	17 %	18 %
Engineering, Procedures and Security	16 %	19 %
Information technologies	9 %	21 %
Biology & Health	20 %	25 %
Ecosystems and Sust. Development	21 %	17 %
Sustainable energy and environment	16 %	12 %

Source: ANR

Table 9.

Women in R&D decision-making in Hungary, July 2008

Name of Body	Number of members	Number of women	Proportion of women (%)
Chief officers of the Hungarian Academy of Science (HAS)	6	1	16.6
Elected Chairs of the HAS Scientific Sections	11	0	0
HAS full members total	263	10	3.8
HAS corresponding members	67	10	14.9
HAS Governing Board	11	2	18.2
HAS Council of Doctors Members	25	1	4
HAS Council of Doctors Substitute Members	21	4	19
The Science and Technology Policy, Competitiveness Advisory Board	11	0	0
Science and Technology Policy Council	17	0	0
Research and Technological Innovation Council	15	0	0
Higher Education and Research Council	19	1	5.2

Source: websites of respective institutions accessed in July 2008

In **Latvia**, women are in the majority among researchers in all three major sectors of research: higher education, governmental and industrial research. In the decision-making bodies of the Latvian Council of Science (LCS) women still are in a minority, and some expert commissions are all male. The LCS is responsible for and has the authority to allocate state subsidies for science and research. It is a collegial body of researchers elected for three years, and it organises evaluation and funding of basic and applied research projects. The Council has representatives from the Ministry, Latvian Academy of Science, and the Conference of Rectors. In 2007, the LSC consisted of 12 members, of which two were women. Chair and Vice Chair have since the beginning of its existence been men, and only two women have ever been members. The Secretariat of the LCS is all female.

There are five Expert Commissions assisting the Latvian Council of Sciences and providing the expertise for the submitted project proposals. In two Expert Commissions (Expert Commission for Natural Sciences and Mathematics and Expert Commission for Engineering and Computer Sciences) there is not a single woman among the experts. As for the Expert Commission for Biology and Medicine, out of its 10 members only two are women. The two other Expert Commissions, one for Agriculture and the other for Social Sciences and Humanities, each have four women and six men. The Social Sciences and Humanities Commission is the only one chaired by a woman.

The Latvian Council of Science has formed four working groups responsible for specific issues such as Strategy of Research Development, International Cooperation, Peer Review and Appeal. The gender distribution in these working groups varies: there are no women (out of eight members) represented in the Working group dealing with issues related to international cooperation and preparing draft decisions for supporting international cooperation activities, but close to 30 % women in the Working group dealing with problems related to peer reviews of project proposals.

In **Slovenia**, a third of researchers in the HE sector are women. In the Slovenian Research Agency, the highest decision-making bodies are the Management Board and the Scientific Council. The Management Board supervises the overall functioning of the Agency. It is made up of seven members appointed by the government (with four representatives of the government, two of the research organisations and one of the Chamber of Commerce). Currently the Management Board has only one female member. The mission of this body is to decide on the selection and financing of projects and programmes on the basis of the draft priority list compiled by the Scientific Council. The Management Board cannot change the priority list, but can ask for supplementary justification from the Scientific Council. The Scientific Council is a professional advisory body comprising six members (from the scientific field), representing six disciplinary areas. At present there are no female members of the Scientific Council. The president and the members of the Scientific Council are nominated by the Minister of Research upon recommendation of the governmental Council for Science and Technology.

The Scientific Council appoints permanent expert bodies (scientific boards by disciplinary area) and temporary expert bodies (scientific boards for specific programmes). At present (2008), 19 of the 71 members of the permanent expert bodies and five of the 13 members of temporary expert bodies are female. This means that the target for gender representation (at least one third for both male and female within each disciplinary area) is achieved for temporary expert bodies (38 % female members), but only for two of the seven permanent expert bodies (natural and interdisciplinary sciences with 36 % and 33 % female members). The foreign and domestic evaluators (each proposal must be evaluated by at least one foreign peer) are selected by the permanent and temporary expert bodies and the list of evaluators has to be approved by the Scientific Council.

Countries with less than 20 % of women in scientific boards

Finally, a very diverse group of countries, including Belgium, Cyprus, Czech Republic, Germany, Italy, Poland and Slovak Republic are according to the She Figures 2006 data countries with lowest proportion of women in scientific boards in Europe, less than 20 % in 2004. Portugal (with no data in She Figures 2006) also belongs to this group. Most of these countries have a larger overall gender gap, the sign of a social context which tends to be unfavourable to women, and the Czech Republic, Cyprus and Italy have both high overall gender gaps and less than average women in HE research.

In the **Czech Republic**, 26 % of all gatekeepers of the Grant Agency of the Czech Republic are women in 2008, which corresponds to the proportion of women among all researchers in Czech Republic. There are no women in the Presidium. The highest share of women is found in the Social Science Committee, nearly half of the members, and lowest in the Technical Science Committee, 16 %. Three subcommittees have no female members at all: Engineering, Philosophy and Plant Production, but five subcommittees are gender balanced; none of those is from Technical or Natural Sciences.

Table 10.

Gender Composition of Committees, Subcommitees and the Presidium of the Grant Agency of the Czech Republic in 2008

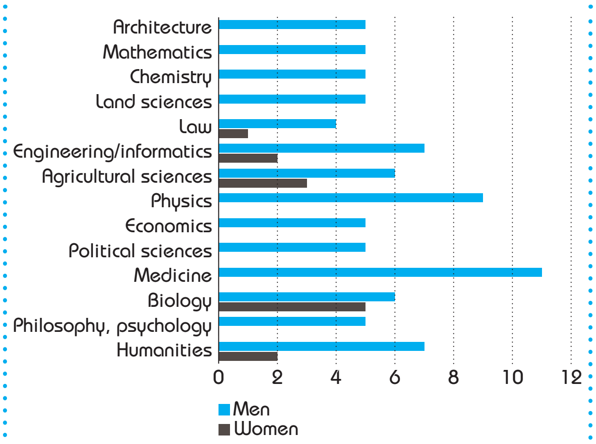
	Men	Women	Share of women
The Presidium of the GA CR	5	0	0 %
The Control Board of the GA CR	9	1	10 %
Technical Science Committee	21	4	16 %
Subcommittee for Engineering	18	0	0 %
S. Electrical Engineering and Cybernetics	18	1	5 %
S. Civil Engineering, Architecture and Transportation	17	1	6 %
S. Technical Chemistry	14	2	12.5 %
S. Metallurgy	7	1	12.5 %
S. Metallurgy and Material Engineering	18	4	18 %
Natural Sciences Committee	20	5	20 %
S. Mathematics and Information Science	15	1	6 %
S. Physics	20	1	5 %
S. Chemistry	16	5	24 %
S. Cellular and Molecular Biology	9	3	25 %
S. Sciences about Earth and Space	21	3	12.5 %
S. General and Ecology Biology	19	2	9.5 %
Medical Sciences Committee	13	4	23.5 %
S. Molecular Biology, Genetics, Exp.Oncology	8	3	27 %
S. Biochemistry, Metabolism and Nourishment	9	1	10 %
S. Morphology Disciplines and Experimental Surgery	5	2	29 %
S. Physiological Disciplines, Pharmacology, Toxicology	10	3	23 %
S. Neurosciences	5	2	29 %
S. Microbiol., Immunology, Epidemiology and Hygiene	4	4	50 %
Social Sciences Committee	13	11	45.8 %
S. Philosophy, Theology and Religion Studies	11	0	0 %
S. Economy Sciences	15	3	17 %
S. Sociology	15	3	17 %
S. Historical Sciences, Nation Studies	13	3	19 %
S. Philology	8	10	55.5 %
S. Psychology, Pedagogy	9	7	44 %
S. Legal Sciences, Political Sciences	7	7	50 %

	Men	Women	Share of women
S. Aesthetics, Music Science and Art Sciences	8	5	38 %
S. History of 19th and 20th Centuries	9	4	30 %
Agricultural Sciences Committee	14	4	22.2 %
S. Plant Production, Genetics, Breeding	6	0	0 %
S. Plant Medicine, Physiology of Plants	8	1	11 %
S. Animal Production, Genetics, Breeding	4	1	20 %
S. Physiology and Pathology of Animals	4	2	33 %
S. Agricul. Products, Food Production, Ecotoxiology	3	2	40 %
S. Landscape Care, Forests and Soil	7	1	12.5 %
TOTAL	**455**	**117**	**25.7 %**

Source: www.gacr.cz accessed in June 2008

Figure 2.

Evaluators of 2006 PRIN grants by gender and discipline in Italy



Source: Rossella Palomba, personal elaboration on MIUR data

In **Italy** around 30 % of all researchers are women. According to She Figures 2006, only 13 % of members of scientific boards are women. The Research Projects of National Interests (PRIN) funded by the Ministry of Universities and Research form the main funding source for academic research. The applications are evaluated by national evaluation panels, appointed by the Ministry for 14 large disciplinary areas. No information was found on how the evaluators were recruited. Concerning the funds allocated in 2006, the distribution by gender of the evaluators was calculated on the basis of their first names on the Ministry of University and Research (MIUR) website because the information about gender was otherwise not available. As Figure 2 makes particularly obvious, the presence of women as evaluators is very limited. It is concentrated in Agricultural Sciences, Humanities, Law, Biology and Engineering/informatics. All other disciplines have no women among the evaluators. In all disciplinary groups, women – when present – were in the minority.

Poland, according to She Figures 2006, had only 7 % of women in scientific boards in 2004, despite the fact that the proportion of women among full professors is among highest in the EU, and that 41 % of HE researchers are female. The boards awarding grants in the Ministry of Education and Science in 2005-2008 consist almost exclusively of men. In the section of humanities and social and behavioural sciences among 5 members there is one woman (with a title of professor). In the section of life sciences among 7 members there is one woman (with a title of professor). Women are totally absent in the board of exact sciences (6 members), the board of medical sciences (5 members) and in the board of engineering (5 members).

Portugal belongs to the countries with the lowest share of women among gatekeepers in research funding, despite the fact that women are strongly represented in research. The majority of researchers in all domains except in engineering and technology are female, and the presence of women in all disciplinary fields is higher than the mean of EU-25 countries. Nevertheless, among the gatekeepers of research funding in Portugal women are clearly underrepresented. One of the three directors of the key institution awarding research funding, the National Research Council Fundação para a Ciência e a Tecnologia (FTC) is female, but in its seven scientific councils only 17 % of members are women, and only one of the council chairs (Table 11).

Table 11.
Gender Composition of Scientific Councils of the Fundação para a Ciência e a Tecnologia in 2005

Scientific Council	Chairperson	Members (incl.Chair)	Female members
SC on Biology and Biotechnology	Man	8	2
SC on Engineering Sciences	Man	8	1
SC on Exact Sciences	Man	7	1
SC on Sea and Atmosphere	Man	9	0
SC on Health	Man	10	3
SC on Social Sciences and Humanities	Man	12	2
SC on Earth and Space	Woman	5	1
Total	**7 (1 w)**	**59**	**10 (17 %)**

Source: FCT Annual Report 2005

A similar low proportion of women is also found in the evaluation panels assessing applications for the FTC: 16 % of members of the evaluation panels were female in 2006 (Table 12). The proportion of women in the evaluation panels is remarkably low in some fields, for instance only 7 % in medicine.

The panel members are international scholars chosen by coordinators appointed by the Fundação. The coordinators chosen by the Fundação are 'among the most renowned experts on each field around the world'. There is no information on the criteria used for the recruitment of evaluators.

Table 12.
Gender composition of the evaluation panels of the Fundação para a Ciência e a Tecnologia by scientific domain in 2006

Scientific domain	Female	Male	% of W	Total
Natural Sciences	11	54	17 %	65
Engineering and Technology	3	55	5 %	58
Medical and Health Sciences	4	56	7 %	60
Agricultural Sciences	7	13	35 %	20
Social Sciences	11	32	26 %	43
Humanities	8	29	22 %	37
Total	**44**	**239**	**16 %**	**283**

Source: data directly provided by the Fundação para a Ciência e a Tecnologia

In the **Slovak Republic**, only 10 % of the scientific board members are women according to She Figures 2006. 41 % of all researchers are women. The selection of the projects submitted to the Slovak Research Development Agency is managed by expert panels (the Scientific Councils) appointed for the period of four years by the Minister of Education, based on the proposals from research organisations (universities, research institutes, Slovak Academy of sciences), non-governmental organizations and the industrial community in Slovakia. Each expert panel has at least one foreign member. The proportion of women of all gatekeepers is 10 %, but in the Medical Council and many RC Working Groups there are no women experts at all. The highest proportion of women, nearly a third, is found in committees that are less important strategically, such as the committee on human resources and science popularization (Table 13).

Table 13.

Gender Composition of Slovak Research and Development Agency Scientific Councils and Working Groups in 2007

Body	Men	Women	% of women
Presidium	13	1	7.1
Council of Natural Sciences	11	1	8.3
WG: mathematics, physics, astronomy and information science	9	0	0
WG: chemistry	7	0	0
WG: sciences on Earth and environment	9	1	10
WG: biology	7	3	30
Council of Technical Sciences	13	1	7.1
WG: electrical engineering, information and communication technology, automation and control	9	1	10
WG: mechanical engineering, mining, metallurgical engineering and other technical sciences	10	0	0
WG: civil engineering, transp.& communication, wood & hydrological sciences, chemical engineering	13	0	0
Council of Medical Sciences	13	0	0
Council of Agricultural and Forestry Sciences	12	1	7.7
Council of Social Sciences and Humanities	10	2	16.7
Council of International Research Cooperation	10	1	11
Council of Human Resources and Science Popularization	11	5	31.2
Council for FP7 EU assistance projects	10	1	11
Council for Cooperation of research institutions and SMEs	10	2	20
Council for R&D support in SMEs	10	2	20
Council for Center of Excellence creation	11	1	8.3
Total	**198**	**23**	**10.4**
WG - working group			

Source: www.apvv.sk

In conclusion, in most countries women continue to be a minority among gatekeepers of research funding, regardless of their share among researchers. The research funding agenda continues to be shaped and evaluation of excellence performed predominantly by male gatekeepers. Several all-male boards, committees and subcommittees were identified across Europe. Many committees with one token woman were also identified. The broader social and political context plays an important role here. Common to countries where gender balance is approached among research funding gatekeepers appears to be that there is political will to promote gender equality. They also have a low overall gender gap in society, and in many of them the proportion of women in HE research is larger than the EU average. However, contrary to what might be expected, the strong presence of women in research alone does not automatically translate into a more equal representation among the research funding gatekeepers, as the situation in the Baltic states, Poland, Portugal, and Slovak Republic demonstrates.

Looking at disciplinary differences, in general, the highest proportions of women were found among funding gatekeepers in humanities and social sciences, the health sciences and in the biological and agricultural sciences; fields where there are relatively many women engaged in research. The smallest proportions of women, a single token woman or in many cases no women, were found among members of technological and engineering research councils, and evaluation panels and reviewers in these fields. However, several examples of all male committees and panels were identified also in some fields where women have been traditionally more numerous. In Italy, the research projects of national interest (PRIN) are evaluated by all male panels in nine out of fourteen disciplinary fields. These all male panels were assessing applications in the fields of philosophy and psychology, medicine, political sciences, economics, land sciences, physics, chemistry, mathematics and architecture. In Poland, Ministry of Science grant awarding boards in 2005-2008 were almost exclusively male; in the sections of exact sciences, engineering and technology but also in medicine there were no female members. In the Czech Republic, women were missing from the Czech Grant Agency's Subcommittees on engineering, philosophy and plant production. The Slovak Republic Medical Council is all male.

The gender imbalance among gatekeepers of research funding denies female researchers opportunities to participate in and influence the research agenda. At the individual level, women are denied important opportunities to become familiar with funding systems, become integrated into powerful networks in their discipline and to learn the tricks of the funding trade. Better gender balance among funding gatekeepers may not necessarily and automatically affect success rates of women and men, but it may encourage more women to apply for funding. European funding organisations in search of excellence cannot afford to fail tapping the potential of female researchers as decision-makers and evaluators to the extent they now do.

4.3. Evaluation processes and criteria

In this sub-section, the focus is no longer on evaluation structures but on the process itself. To evaluate funding applications, peer review is applied practically everywhere in some form. How many different levels the scientific evaluation includes varies to some extent between the funding organisations. There are systems in which the same body reviews and ranks the applications, such as in the Ministry of Science and Research in Italy, whereas in others, such as in the Czech Republic Grant Agency and the Portuguese Research Council, the organisation of the evaluation is more complex and several levels of evaluators are used. Individual reviewers and/or panels are used, and mixing national and international reviewers is common, especially in smaller countries. Usually the final funding decisions are made on the basis of written documentation only but in some countries and funding forms, site visits, discussions and interviews with the applicants are additionally used.

How the peers who conduct the reviews are recruited is not often clear. The discretionary matching of reviewers to proposals might be crucial, and it appears as some sort of a black box within many funding institutions. Peer reviewers may be appointed for a certain period or for a single funding call only. Some funding organisations are recruiting their peer reviewers systematically by calls, by broad consultations with stakeholders, by nomination procedures or elections, or by on-line application. In case of systematic recruitment, the decisions on them are usually made by the board of the organisation or its equivalent. In many cases the recruitment process is more opaque: administrators, evaluation coordinators or 'rapporteurs', appointed by the decision-making bodies, recruit the reviewers using their field knowledge, web resources and networks. The criteria for selecting peer reviewers are not often explicit either. Peers are not necessarily all professors, although in practice they often are – this tends to exclude women – and, at least in the UK, non-academic stakeholders may also participate in the evaluation.

International reviewers and experts are increasingly used to evaluate funding applications, even if this sometimes causes language problems. The use of international reviewers is especially important in small countries or countries where the national evaluator pools are otherwise limited, to counteract opportunities for and suspicions of nepotism. International reviewing means as a rule that applications need to be submitted in English; this can be problematic especially for researchers in humanities and social sciences in non-English-speaking countries. One way to solve this problem is attempted in Bulgaria, which has recently reformed its evaluation system and currently uses a mix of international and national evaluators. All applications have to be submitted both in English and Bulgarian, and are reviewed by both international and Bulgarian reviewers.

Some new member states have received the permission to use the expert database of the European Commission for identifying foreign experts, and some others, such as Slovenia, co-operate with sister organisations in other countries to recruit evaluators. In **Malta**, the Programme Management Committee of the Malta Council for Science and Technology identifies relevant overseas research councils for peer review. The peer review is carried out by the external reviewers nominated by these foreign research councils, with at least three external reviewers evaluating each proposal. On the basis of the evaluation reports submitted by the overseas reviewers, an external evaluation team identifies the projects to be funded according to the individual merits. Final decision-making remains with the Programme Management Committee.

Remote electronic evaluation used frequently by some countries might be a useful practice from the perspective of potential evaluators with mobility restrictions due to family obligations or disabilities. It makes it possible to engage in international evaluation tasks without time-consuming travel. No information or evidence was obtained on whether women refuse more often than men invitations to act as experts and evaluators, sometimes presented as an excuse for the small number of women evaluators.

As mentioned in the previous section, evaluation processes and evaluation and funding criteria are frequently explained on the websites of funding organisations. The UK Research Councils or the French ANR have additionally a user friendly 'frequently asked questions' section for both peer reviewers and applicants on their websites.

The evaluation criteria generally consist of scientific quality criteria of the researcher and the project, pertinence criteria considering the funding programme or scheme, and often also social or national relevance criteria. These are usually presented in rather general terms. For example, in the Swiss SNSF the central criteria for evaluation are the scientific quality, originality and project methodology as well as qualifications and track record of the applicants. The Academy of Finland applies a set of five criteria: scientific quality and innovativeness of the research plan; competence of the applicant/research team; feasibility of the research plan; cooperation contacts for the research; and significance of the research project for the promotion of professional careers in research and researcher training. A starting point is that the project to be funded shall 'benefit Finnish research, society or international cooperation'.

Gender is only rarely explicitly mentioned among evaluation and funding criteria (see, however, the few examples in section 3.2.). Gender training of evaluators by the funding organisations appears not to be common, on the basis of the national reports. The Swedish Research Council was given a gender equality task by the Government in 2006. This task includes reporting about gender equality training for evaluators, scientific boards and staff at the Council.

4.4. Eligibility

One important gatekeeping practice is related to eligibility. Who is defined as eligible to apply for funding? What criteria are used to define eligibility? Are any of these criteria linked to gender and how? Are career breaks due to childcare leave or similar reasons taken into account when defining eligibility?

This section illustrates what kind of gender relevant issues can be related to eligibility rules and should be critically considered by funding organisations, but once again does not aim to be an exhaustive analysis. Eligibility rules which were identified concerned age or academic age, degrees completed, residence or citizenship, or position demanded. Depending on the funding instrument, a completed doctorate is often demanded, but some funding organisations also have extensive doctoral programmes. In postdoctoral funding, it is common to define a maximum number of years from completing the doctorate. Similar rules are also applied by the ERC.

Explicit eligibility rules related to the applicant's publication record were reported only rarely. In **Estonia**, the applicant must have published at least three high level publications within the last five years to be eligible. If the applicant for a grant has been on parental leave or on military service in the last five years, the deadline of the publication requirement is extended by the corresponding duration. Recently, the **Austrian** FWF published some changes related to the eligibility procedures. The scientific qualification of applicants has now explicitly to be documented by international publications in peer-reviewed journals. This measure seems to be a logical consequence of the aimed internationality in the Austrian funding system. As recent research among Austrian scientists reveals, female researchers publish fewer articles in peer-reviewed journals even if disciplinary differences are taken into account (Schacherl et al. 2007: 99). This change in eligibility rules should be monitored regarding the quality and quantity of potential female applicants.

An example from **Finland** of a funding scheme, in which the applicant (Principal Investigator – PI) must in practice have a permanent or longer fixed-term position, is the Academy of Finland research project funding. The proportion of female applicants has been quite constantly 23-28 % in the period 2001-2006, and women's success rates have been around this level, in a few years slightly higher. However, one can estimate that the potential pool of female applicants is remarkably larger than their share of applicants, given that currently half of Finland's higher education researchers are female, and over half of the doctorates are currently obtained by women. Indeed, the current proportion of female applicants is at the same level as the share of women among professors (23.5 % in 2007), even though a professorial rank is not demanded of the PI.

According to the Academy of Finland funding rules, the PI cannot have her/his own salary covered from the project funding but only exceptionally, and only for one year (9), whereas the project duration is usually 3-4 years. Finnish universities do not have a tenure system; a large number of experienced and competent senior researchers in universities are employed in fixed-term contracts, often quite short-term. They are in practice not eligible for applying research project funding as a PI. The problematic nature of this eligibility rule has been criticized by the trade union of researchers, and also taken up by the Ministry of Education Working Group on Research Careers (MinEdu 2006) but thus far without result.

In the **UK**, eligibility differs between grants. For research grants, applicants normally have to be academics on a permanent employment contract as in the Finnish case, although there are some variations according to the funder's eligibility requirements. There are large numbers of researchers on fixed term contracts in the UK, who are employed on research projects. They would not normally be eligible to apply for a research grant.

In **Austria**, a recent change in eligibility rules concerns the possibility to apply for funding of the applicant's own position. This has been extended to researchers who are doing research with a stipend of the FWF abroad and are willing to conduct further research in Austria. Among

(9) www.aka.fi, referred to on October 15, 2008

the applicants for funding of their own position the proportion of women is relatively high. As a consequence, the change of eligibility should be positive for female researchers.

In **Bulgaria** the competitive project-based financing is based on a kind of 'young scientists mainstreaming' policy, which has been implemented at all levels including the criteria of evaluation of the submitted projects under the announced Calls for proposals. The current aim is to reach a balance by age and not a balance by gender. However, the young women scientists being a part of the privileged target group of young scientists could profit from the current situation.

A new regulation related to promotion of young researchers, introduced in 2008 by the Bulgarian National Science Fund in competitive research project funding, can help to promote young women in research careers, even if this is not the stated aim of the reform. The participation of young scientists and/or PhD students in the research team is now one requirement for the eligibility of the submitted proposal; the participation of young researchers in the proposal is also included in the evaluation criteria of the submitted proposals. Economical incentives are also used: the grant holders (i.e. the consortium) can receive payment/salary up to 50 % of the awarded grant if at least 1/3 of the members of the research team are PhD students and/or young scientists; up to 40 % of the awarded grant if at least 1/5 of the members of the research team are PhD students and/or young scientists; up to 30 % if less than 1/5 of the members of the research team are PhD students and/or young scientists and so on.

In **Poland**, the Foundation of Polish Science young scientists START grants, the eligibility rules concerning age take gender into account. There is an age limit of 30; in the case of a female applicant, it is increased to 32 if she had been on maternity and/or parental leave.

In **Austria**, since 2006, applications are possible without any restrictions concerning biological age. For some programmes, the time period after the dissertation is relevant, child-care is considered with three years for each child. Women are entitled to apply simultaneously in regular programmes (e.g. START) and in career programmes only for female scientists ('Elise-Richter-Programme').

In **Czech Republic** Grant Agency of the Academy of Sciences, age limits have also been increased in the case of parental leave. This concerns junior research grants, which range from 1-3 years and are intended for researchers younger than 35 years of age who have a Ph.D. or study in a Ph.D. programme. It is stipulated that: 'Considering equal opportunities of women and men, applicants returning after parental leave will receive preferential treatment. Concretely, the age limit will be increased for them by 2 years for each child (…), the start of their already awarded grants can also be delayed by 9 months'. This gender-sensitive provision was suggested by the National Contact Centre Women in Science and implemented in 2006.

Very few funding organisations have monitored the applicants, among them the German DFG, the Swedish Research Council and the Swiss SNSF. In **Germany** female applicants to DFG were found to be younger than male applicants. This is due to the different age structure of female and male scientists in general and to a higher proportion of women applying without the status of a professorship. There is an indication that women are underrepresented among the applicants in Germany. Therefore, DFG has put on its agenda to encourage young female scientists to apply for different forms of research funding, because there is no evidence of gender discrimination in the funding allocation system and younger applicants have relatively better chances of grant approval.

In conclusion, eligibility requirements are very diverse across Europe. A particularly penalizing element for women is requiring applicants to have a permanent position or forbidding them to fund their own salary out of the research grant. Age limits are the other delicate point: in more favourable systems, academic or career age is used, not biological age, and parental leave (for both mother and father) postpones the limits.

5. Women, men and success in funding

This section presents an analysis of funding success rates by gender and discipline, some highly prestigious funding schemes ('excellence initiatives'), the first round of the new prestigious European Research Council grants, and application behaviour from a gender perspective.

Before analyzing the information which this expert group has collected concerning success rates, it is important to recall the limits of the enterprise, which is the first attempt at the collection of data on academic competitive funding on such a scale in Europe. The group has collected information by discipline, on various funding schemes, for research grants and post-doctoral fellowships, in 33 different countries. In many countries, the funding systems are multi-source and very diverse, so the analysis was restricted to the main funding organisation(s) or programmes – in no way does it give a complete picture of each country, but it can be argued that these main funding organisations and programmes are strategically important in each country. Another obstacle to comparison is the fact that not all countries provide data according to the disciplinary categories from the Canberra manual (natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences and humanities). Nevertheless, a broad picture of the European research funding landscape is beginning to emerge and this allows to clearly situate the needs for further research and improvements of data collection.

5.1. Success rates

A first level of evaluation of the outcome of a funding operation is the *success rate*, defined as the ratio of the number of proposals funded to the number submitted and commonly expressed as a percentage:

Success rate = number of proposals funded / number of proposals submitted

This rate, which measures the probability of receiving funding, can be calculated separately for proposals whose Principal Investigator is male or female, allowing a comparison of the degree of success according to the sex of the project leader. (Of course, a more sophisticated analysis would take into account the composition of whole teams.) These success rates are provided in Table 14 for the main research grant-funding programme(s) in 27 of the 33 countries examined. The data concern the year 2007, unless otherwise specified. When the disciplinary categories are not those of the Canberra manual, this is indicated.

Data on the outcomes of funding operations are sometimes presented as the percentages of women among applicants and among grantees. Strictly speaking, the information this provides is equivalent to success rates if the total numbers of submitted and funded proposals are also provided. However, this mode of presentation does not directly express the probability of receiving funding, easily comparable between men and women (or among any other categories, such as age, origin, etc.) and it is not recommended to use it alone as a gender indicator of funding. However, the proportions of women are of course of interest when related to the gender ratios in the disciplinary fields.

If only small numbers of applicants and even smaller numbers of grantees are being considered, comparisons of success rates obviously have to be made with caution. To gauge their validity, the statistical significance of the differences observed has to be estimated. For this purpose, a standard statistical test, known as the Chi2 test, was carried out. It gives the probability that the differences observed could be due only to chance. In Table 14, this probability is indicated in all the cases where it was lower than 25 %, in other words, when there is less than 1 chance in 4 that the difference in success rates is due to chance.

Research grants

In spite of the heterogeneity of national situations, success rate data by gender were obtained from the majority of countries, 27 of the 33, concerning research grants, generally from their main funding system (as indicated on Table 14 – see also country reports in Annex for more detail).

Table 14, which presents success rates for research grants per disciplinary area, demonstrates a diverse situation. In some countries or disciplines, men had very significantly higher success rates than women; the probability of the difference observed being only due to chance is less than 5 % ($p<0.05$). In other words, there is a 95 % chance that the difference is due to some other undetermined factor (which could be a difference in quality of applications, discrimination, etc.) Such highly significant differences are observed in Israel (results by discipline were unavailable), in Italy for medical sciences, Poland for natural sciences and social sciences, Spain for natural sciences, engineering, medical sciences and humanities, Sweden for natural sciences and medical sciences and Switzerland for natural sciences and humanities. In fewer cases, the opposite was observed: women had very significantly higher success rates than men. Again, at the threshold of a 5 % chance or less that the difference is due to chance ($p < 0.05$), one finds: Belgium – Flanders in natural sciences, Finland in humanities, Lithuania in social sciences, Netherlands in social sciences, Portugal in natural sciences and Turkey in medical sciences.

These lists were established taking quite a high threshold of significance: the odds are only 1 to 20 that the differences are due to chance. No such strongly significant gender differences in success rates were observed in the other disciplines or countries for that year, but as can be seen on Table 14, a number of less significant differences do appear.

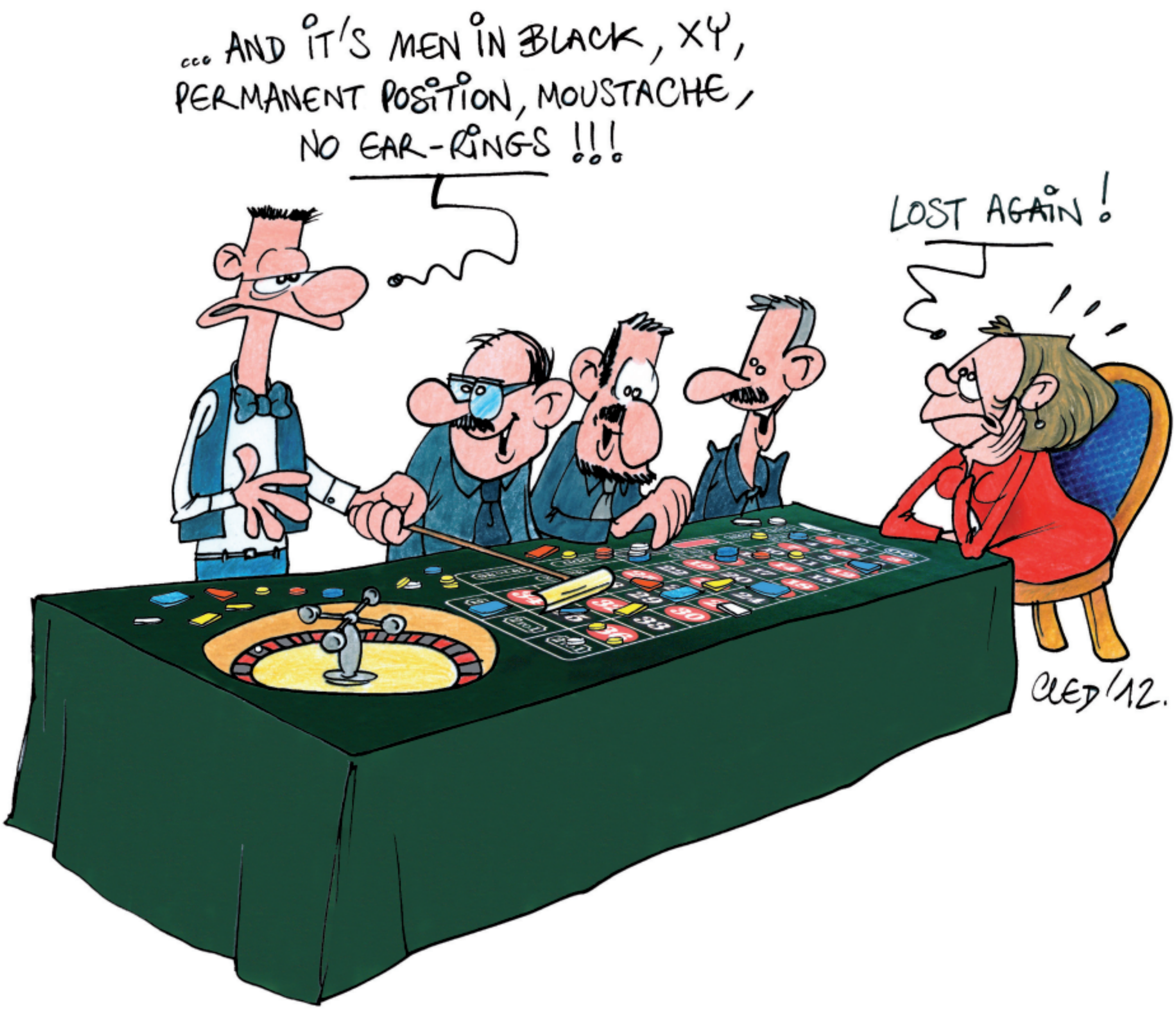


Table 14.

Composite table of success rates by gender of the Principal Investigator and discipline in research project funding

Success rates	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI

AUSTRIA	All disciplines											
nb of applications	789	163										
nb funded	303	71										
success rate	38%	44%										
	p<0.25											

Schacherl et al. 2007

Belgium: gendered data ony for Flanders (see post-docs)

BULGARIA	Nanosciences + ICT		Energy eff. and safety		Health						Cultural & hist. heritage	
nb of applications	58	22	27	16	27	21					14	5
nb funded	13	4	10	3	12	11					4	3
success rate	22%	18%	37%	19%	44%	52%					29%	60%
			p<0.25								p<0.25	

Dept Scientific programmes of Ministry Education and Science 2007

CROATIA: no gendered data on success rates

CYPRUS: no gendered data on success rates

CZECH: no gendered data on success rates

DENMARK												
nb of applications	495	147	425	143	587	295			226	84	354	209
nb funded	148	39	104	27	234	78			73	20	131	68
success rate	30%	27%	24%	19%	40%	26%			32%	24%	37%	33%
	p<0.25								p<0.1			

Project grant applications to DCIR received in 2007

ESTONIA	Physical Sciences and Engineering				Health		Envir. and Biosciences		Culture and Society			
nb of applications	84	16			23	21	62	48	43	31		
nb funded	54	8			12	12	31	24	26	14		
success rate	64%	50%			52%	57%	50%	50%	60%	45%		
									p<0.25			

Estonian Science Foundation 2007

FINLAND												
nb of applications	1088	248	489	65	466	212	85	57	340	168	228	118
nb funded	235	45	110	12	121	59	10	12	68	41	42	35
success rate	22%	18%	22%	18%	26%	28%	12%	21%	20%	24%	18%	30%
	p<0.25						p<0.25				p<0.02	

Academy of Finland 2005-2007, general research project funding

FRANCE	Mat. & comput.		Eng, proc & sec		Biol & health		Ecol. & sust.		Soc. Sci. & Hum.		Nonthematic	
nb of applications	535	83	205	23	942	326	530	194	201	96	1646	328
nb funded	159	32	54	8	188	72	145	55	44	21	260	44
success rate	30%	39%	26%	35%	20%	22%	27%	28%	22%	22%	16%	13%
	p<0.25											

ANR 2007

Success rates	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
GERMANY					incl. Biology							
N appl	1481	137	1539	88	1876	404	256	57	493	142	464	145
N. funded	649	52	484	26	707	139	99	17	191	49	188	66
Success rates	44%	38%	31%	30%	38%	34%	39%	30%	39%	35%	41%	46%
	p<0.25				p<0.25		p<0.25					

DFG 2004, 'Normalverfahren', (single projects) own calculations, see Hinz et al. 2008

GREECE: no gendered data on success rates

HUNGARY: no gendered data on success rates

ICELAND												
nb of applications	55	20	36	3	42	20	4	2	24	16	26	17
nb funded	15	6	12	0	8	8	0	1	6	4	7	5
success rate	27%	30%	33%	0%	19%	40%	0%	50%	25%	25%	27v%	29v%
			p<0.25		p<0.1							

Icelandic Research Fund 2007

IRELAND	SFI, all disciplines				HRS 2007				IRCHSS 2007 Res. Grants			
nb of applications	570	134			452	235			22	25		
nb funded	142	26			70	43			4	6		
success rate	25%	19%			15%	18%			18%	24%		
	p<0.25											

ISRAEL National Science Fund:	All disciplines		US Israel Fund:		Germany Israel Fund:							
nb of applications	856	221	854	139	2025	348						
nb funded	310	51	336	49	490	96						
success rate	36%	23%	39%	35%	24%	28%						
	p<0.0002				p<0.25							

H. Messer-Yaron 2001

ITALY												
N appl	483	67	520	48	780	277	214	50	316	62	267	115
N. funded	143	15	93	7	190	46	57	9	107	21	87	31
Success rates	30%	22%	18%	15%	24%	17%	27%	18%	34%	34%	33%	27%
	p<0.25				p<0.01		p<0.25					

MIUR, requested data

LATVIA												
nb of applications	190	108	125	25	59	43	32	18	36	53	20	32
nb funded	174	99	121	24	53	38	30	15	21	45	17	31
success rate	92%	92%	97%	96%	90%	88%	94%	83%	58%	85%	85%	97%
							p<0.25		p<0.01		p<0.25	

Number of grants funded by Latvian Science Council in 2007

LITHUANIA												
nb of applications	15	15	21	5	5	3	6	2	7	5	5	9
nb funded	5	2	4	1	1	1	0	2	3	1	2	3
success rate	33%	13%	19%	20%	20%	33%	0%	100%	43%	20%	40%	33%
	p<0.25		Figures too small to estimate Chi2									

Number of applications for state scholarship for young scientist plus number of applications state scholarship for distinctive scientists in 2007

Success rates	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
LUXEMBOURG	All disciplines											
nb of applications	145	21										
nb funded	84	12										
success rate	58%	57%										

2001-2007

MALTA	2004 All disc.		2006 All disc.									
nb of applications	65	20	50	8								
nb funded	10	3	7	0								
success rate	15%	15%	14%	0%								

MCST National R&I Programme

NETHERLANDS	Chem+Phys				Med		Earth+Life					
nb of applications	207	44	71	13	158	106	104	33	175	121	91	57
nb funded	32	21	11	7	25	15	17	8	22	16	17	11
success rate	15.5%	47.7%	15.5%	53.8%	15.8%	14.2%	16.3%	24.2%	12.6%	13.2%	18.7%	19.3%
	p<0.00001		p<0.01									

Veni+Vidi+Vici, NWO 2007 (Romijn 2008)

NORWAY												
nb of applications	973	300	1342	321	404	213	217	81	587	322	249	195
nb funded	242	68	759	196	106	49	104	44	208	121	80	50
success rate	25%	23%	57%	61%	26%	23%	48%	54%	35%	38%	32%	26%
			p<0.25								p<0.25	

The Research Council of Norway/NIFU STEP

POLAND												
nb of applications	1691	935	2328	622	725	584	382	234	808	518	466	259
nb funded	678	283	803	228	268	191	141	75	305	162	162	89
success rate	40%	30%	34%	37%	37%	33%	37%	32%	38%	31%	35%	34%
	p<0.000001				p<0.25		p<0.25		p<0.05			

Total, Ministry of Science and Higher Education, 2007

PORTUGAL												
Nb of applications	641	302	1279	449	381	351	236	218	379	286	148	121
Nb funded	445	273	649	228	186	186	130	111	225	157	108	88
Success rate	69%	90%	51%	51%	49%	53%	55%	51%	59%	55%	73%	73%
	p<0.000001								p<0.25			

Fundação para a Ciência e a Tecnologia 2006

ROMANIA: no gendered data on success rates

SLOVAKIA												
nb of applications	120	36	194	30	37	17	64	17	26	10	16	3
nb funded	24	4	21	4	7	2	9	2	2	3	1	1
success rate	20%	11%	11%	13%	19%	12%	14%	12%	8%	30%	6%	33%
									p<0.01		p<0.25	

General call W2006 of Slovak Research and Development Agency (SR&DA) from 2006 (only research project funding)

SLOVENIA												
nb of applications	269	131	490	119	164	89	117	110	157	65	125	131
nb funded	90	34	139	41	64	34	33	28	39	18	51	41
success rate	33%	26%	28%	34%	39%	38%	28%	25%	25%	28%	41%	31%
	p<0.25		p<0.25								p<0.25	

Research project funding only, 2005-2007

Success rates	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
SPAIN												
Nb of applications	2360	756	1111	192	410	218	423	284	1066	439	533	348
Nb funded	1638	491	734	112	195	82	207	128	513	209	344	186
Success rate	69 %	65 %	66 %	58 %	48 %	38 %	49 %	45 %	48 %	48 %	65 %	53 %
	p<0.05		p<0.05		p<0.05						p<0.001	
Subdirección de Gestión de Programas. Ministerio de Ciencia e Innovación												
SWEDEN	Nat+Eng								H+SS			
nb of applications	827	228	693	134	937	575	221	134	606	429	273	174
nb funded	274	56	197	30	278	145	41	30	76	41	27	22
success rate	33 %	25 %	28 %	22 %	30 %	25 %	19 %	22 %	13 %	10 %	10 %	13 %
	p<0.05		p<0.25		p<0.25				p<0.25			
Swedish Research Council, Swedish Council for Working Life and Social Research, Research Council for Environment, Agricultural sciences and Spatial Planning, 2007												
SWITZERLAND												
nb of applications	610	91	184	14	355	89	na	na	156	42	375	153
nb funded	512	68	127	7	189	47	na	na	92	26	228	78
success rate	84 %	75 %	69 %	50 %	53 %	53 %			59 %	62 %	61 %	51 %
	p<0.05		p<0.25								p<0.05	
SNSF 'free' project funding, Annual Report 2007												
TURKEY												
nb of applications	720	319	1205	282	333	246	783	231	436	209		
nb funded	223	90	314	84	62	74	192	47	114	67		
success rate	31 %	28 %	26 %	30 %	19 %	30 %	25 %	20 %	26 %	32 %		
	0,80		p<0.25		p<0.01		p<0.25		p<0.25			
TÜBA, professor Tolun, 2008												
UNITED KINGDOM							NERC					
nb of applications							827	207				
nb funded							207	39				
success rate							25 %	19 %				
							p<0.1					
2006-07												

No very systematic patterns appear among these preliminary results. There is also no clear relation between the proportion of women in a field and their chances of success in obtaining funding. For instance, in some funding schemes and organisations women had higher success rates than men in engineering and technology or in natural sciences, the most male-dominated fields across Europe, and in others lower.

No large and universal imbalance in favour of men could be observed, comparable to the glass ceiling effect, which weighs heavily on women's careers in all countries and in all disciplines. However, a number of differences can be observed in favour of men with various degrees of statistical significance. The reader should, however, recall that the data concerns one year in most cases and only the main funding organisation(s) in each country. It is obvious that systematic monitoring and longer time series are needed. What is observed here is nevertheless coherent with the meta-analysis of Bormann et al. (2007) who observe a small – but not negligible – difference of 7 % in the odds of success between men and women, in favour of the former (see section 1.2.).

A number of cases appear where on the contrary, women have significantly higher success rates than men. Netherlands is an example of such a case. It is a country where particular attention is paid to the quality of evaluation and where promotion of women in research is an important policy goal (see also the country report in the Annex) because of low representation of women in research, especially at the higher levels.

The cases where women had significantly higher success rates lead to ask whether one should expect, in an ideal evaluation system, that men's and women's success rates be equal. If, through the various obstacles that lie on the path of women's careers, those women who have been selected by the system are a group of 'super-performers', women of higher than average achievement and stamina, one might indeed expect that they would obtain higher success rates at the middle or near the end of their career. This hypothesis could explain why, when the quality of evaluation is improved, higher success rates can be observed for women than for men. Further research is clearly needed to answer such a question, but this effect could also explain the discrepancy observed between the fairly strong gender differences reported for post-doctoral fellowships which concern younger scientists (as in the EMBO study (Ledin et al., 2007) or the Boehringer Ingelheim Funds study (Bornmann and Daniel, 2005), one the one hand, and the weak ones reported in the large British or US evaluations, on the other hand, as discussed in the first chapter (Grant and Low, 1997; Grant, Burden, et al., 1997; Blake and La Valle, 2000; Hosek et al., 2005; Waisbren et al., 2008).

The expert group has been able to collect less information on post-doctoral fellowships than on research grants. Table 15 summarises what has been obtained. Even though one does not observe particular problems, previous research discussed in the first section (Bornmann and Daniel 2005; Ledin et al., 2007) has flagged strong gender differences. This domain urgently needs better monitoring and data collection than is the case at present.

Table 15.

Composite table of success rate by gender and discipline in postdoctoral grants and fellowships in certain European countries

	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
BELGIUM: Flanders												
nb of applications	276	202										
nb funded	101	77										
success rate	37%	38%										
NWO 2007 - all disciplines												
FINLAND												
nb of applications	295	1x 92	96	28	76	154	23	25	93	125	91	111
nb funded	72	53	21	12	19	50	1	4	24	32	21	27
success rate	24 %	28 %	22 %	43 %	25 %	32 %	4 %	16 %	26 %	26 %	23 %	24 %
Academy of Finland			p<0.05		p<0.25		p<0.25					
Academy of Finland (tutkijatohtorit) 2006-2007												
LATVIA												
nb of applications	190	108	125	25	59	43	32	18	36	53	20	32
nb funded	174	99	121	24	53	38	30	15	21	45	17	31
success rate	92 %	92 %	97 %	96 %	90 %	88 %	94 %	83 %	58 %	85 %	85 %	97 %
									p<0,005		p<0,25	
LITHUANIA												
nb of applications	15	15	21	5	5	3	6	2	7	5	5	9
nb funded	5	2	4	1	1	1	0	2	3	1	2	3
success rate	33 %	13 %	19 %	20 %	20 %	33 %	0 %	100 %	43 %	20 %	40 %	33 %
Number of applications for state scholarship for young scientist plus number of applications state scholarship for distinctive scientists in 2007												
LUXEMBOURG												
nb of applications	145	21										
nb funded	84	12										
success rate	58 %	57 %										
All disciplines, 2001-2007												

	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
NETHERLANDS												
nb of applications	75	23	19	5	70	61	32	19	81	76	39	29
nb funded	9	10	4	3	8	11	10	3	11	5	9	6
success rate	12 %	43 %	21 %	60 %	11 %	18 %	31 %	16 %	14 %	7 %	23 %	21 %
	p<0.001		p<0.01				p<0.25		p<0.25			
SLOVENIA, by gender of mentor												
nb of applications	350	164	521	106	108	64	109	93	99	60	96	50
nb funded	89	37	143	25	30	15	45	32	27	17	32	18
success rate	25 %	23 %	27 %	24 %	28 %	23 %	41 %	34 %	27 %	28 %	33 %	36 %
SWEDEN	Nat+Eng								H+SS		Educ	
nb of applications	516	249			189	222			115	77	11	2
nb funded	108	45			72	78			22	13	6	0
success rate	21 %	18 %			38 %	35 %			19 %	17 %	50 %	18 %
Nb funded calculated from report, 2007												
SWITZERLAND												
nb of applications	248,82	389,18										
nb funded	166.82	262.18										
success rate	67 %	67 %										
Prospective researchers, 2007												
TURKEY TUBA	YSF		Post doc SocSci									
	male PI	female PI	male PI	female PI								
nb of applications	789	276	211	216								
nb funded	148	53	62	71								
success rate	19 %	19 %	29 %	33 %								
UNITED KINGDOM	STFC 2005/2006		ESRC 2004/2005									
nb of applications	122	40	24	25								
nb funded	7	5	7	6								
success rate	6 %	13 %	29 %	24 %								
	p<0.25											

STFC

Another way of measuring success in funding is via the amount of funding obtained: success rates can be calculated not with numbers of proposals but with amounts of money, by calculating the ratio of the total amount of funding allocated to the total amount requested by applicants (10):

Money success rate = amount of funding allocated/ amount of funding requested

Again, money success rates can be differentiated for men and for women (or other relevant categories). Data on money success rates were more difficult to obtain than data on numbers of researchers by gender. Nevertheless, information was obtained for some countries. Table 16 provides money success rates for the cases where the necessary data were obtained.

(10) This is a global measure of success, distinct from rates of budget reduction that individual proposals undergo in some systems. Those too could be gender monitored.

Table 16.

Money success rate by gender in some European countries

Iceland (in thousand ISK)	Natural sciences		Eng. and technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
Requested	176,050	94,576	103,333	7743	164,520	72,029	13,912	3346	56,572	46,614	88,766	40,778
Funded	47,040	25,974	34,620	0	20,440	29,890	0	1150	9 290	11,500	23,900	10,500
Money succes rate (%)	26.7	27.5	33.5	0.0	12.4	41.5	0.0	34.4	16.4	24.7	26.9	25.7

Research Fund 2007

Italy (in million Euros)	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
Requested	71.96	8.39	104.07	9.92	131.93	38.07	39.25	6.57	34.27	5.91	35.70	13.77
Funded	14.59	1.31	15.71	1.19	21.55	4.45	7.07	0.81	6.20	1.10	6.01	2.12
Money succes rate (%)	20.3	15.7	15.1	12.0	16.3	11.7	18.0	12.3	18.1	18.6	16.8	15.4

PRIN 2006

Slovakia (in milion SK)	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI
Requested	634	181	1315.5	211	205.3	96.1	360	87.6	140.8	65.2	83.9	11.1
Funded	136.5	26.5	190.4	30.6	53.6	14.8	41.2	6.1	3.6	22.2	9.5	2.1
Money succes rate (%)	21.2	14.6	14.5	14.5	26.1	15.4	11.4	6.9	2.6	34	11.3	18.9

Data from general call VV2006 of Slovak Research and Development Agency (SR&DA) from 2006 (only research project funding)

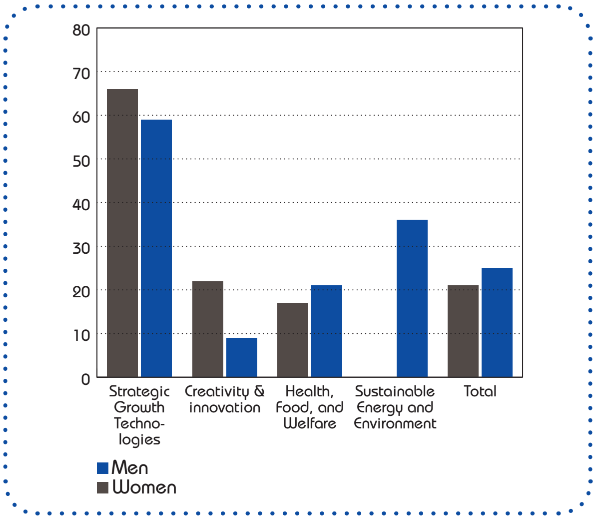
Spain (in million Euros)	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	Male PI	Female PI	Male PI	Female PI	Male PI	Female PI	Male PI	Female PI	Male PI	Female PI	Male PI	Female PI
Requested	857.54	231.79	464.22	58.21	43.89	13.99	155.574.580	89.52	270.99	98.81	70.81	41.60
Funded	497.30	138.37	254.91	27.73	31.51	10.78	106.741.040	61.22	142.39	51.07	37.75	23.80
Money succes rate (%)	58.0	59.7	54.9	47.6	71.8	77.0	68.6	68.4	52.5	51.8	53.3	57.2

Subdirección de Gestión de Programas. Ministerio de Ciencia e Innovación Calculations made by the author. 2006

Danish data provides a graphic illustration of large differences in money success rates between men and women (Figure 3). Again, results vary according to discipline and funding instrument.

Figure 3.

Success rates for men and women at the Danish Council for Strategic Research in 2007: Amount granted/amount applied for.



Source: Data from Danish Agency for Science, Technology and Innovation, www.fi.dk

Other approaches to monitor by amounts of funding are possible. Although they do not allow success rate to be calculated, because the amounts requested are not available, Polish data provide a comparison of amounts awarded by gender (Table 17). Results vary according to discipline and funding instrument (In 'supervisory' projects, the applicant requests funding to supervise a Ph.D. student. In 'own' projects, the application is for their own research).

Table 17.

Principal researchers by gender and awarded funding in Poland (competition 31 January 2006)

Group of disciplines		Average of awarded funds for the project (in zlotys)			% of awarded funds in total		
		Total	Women	Men	Total	Women	Men
HUMANITIES, SOCIAL AND BEHAVIOURAL SCIENCES	TOTAL	61,425	65,516	59,495	100	34	66
	Own projects	83,652	84,681	83,094	100	36	64
	supervisory projects	23,616	22,762	23,930	100	26	74
HARD SCIENCES	TOTAL	122,426	136,659	118,538	100	24	76
	Own projects	191,829	186,423	193,682	100	25	75
	supervisory projects	35,672	39,750	34,874	100	18	82
NATURAL SCIENCES	TOTAL	136,606	143,753	132,914	100	36	64
	Own projects	174,614	179,881	171,748	100	36	64
	supervisory projects	43,833	44,089	43,717	100	31	69
MEDICAL SCIENCES	TOTAL	165,044	161,135	167,679	100	39	61
	Own projects	227,785	217,283	235,148	100	39	61
	supervisory projects	45,998	46,967	45,392	100	39	61
TECHNICAL SCIENCES	TOTAL	184,450	164,854	187,215	100	11	89
	own projects	259,218	221,032	264,901	100	11	89
	supervisory projects	45,594	45,008	45,669	100	11	89
TOTAL		137,441	132,395	139,279	100	26	74
own projects		192,054	173,608	199,499	100	26	74
supervisory projects		38,989	39,578	38,813	100	23	77

Source: Renata Siemienska on Polish Ministry of Education data

Application behaviour is again an important question concerning the amount of funding requested. Are women asking for less funding than men and if so, why? The monitoring exercise carried out on German DFG found that this was not the case, controlled for different disciplines.

However, an analysis of Italian data came to different conclusions. Women asked on average for less funding than men, except in the fields of engineering/informatics and economics (Table 18):

Once again, more data collection and more in-depth research are needed in this area.

Table 18.

PRIN grants in Italy: average per capita budget requested by women and men (Principal Investigator) and ratio of amounts requested by women to amounts requested by men, by discipline, 2006

Disciplinary area	Per capita requested by female PIs (EUR)	Per capita requested by male PIs (EUR)	Ratio female/male
Mathematics	127,600	144,700	88 %
Physics	173,600	194,500	89 %
Chemistry	213,000	248,400	86 %
Land Science	121,200	137,600	88 %
Biology	120,200	149,600	80 %
Medicine	163,600	181,000	90 %
Agricultural science	104,600	133,300	78 %
Architecture, civil engineering	155,100	190,200	82 %
Engineering, Informatics	190,000	173,600	109 %
Humanities	118,000	126,100	94 %
Philosophy	123,600	143,100	86 %
Law	70,700	109,900	64 %
Economics	103,200	95,600	108 %
Political Science and Sociology	119,600	147,000	81 %
Total	**133,500**	**161,700**	**83 %**

Source: Rossella Palomba on MIUR data

5.2. Highly prestigious funding instruments: 'excellence initiatives'

In several countries, various 'excellence initiatives', such as centres of excellence and networks of excellence, and prestigious individual grants have been lately set up, aiming to promote 'the best of the best', and including substantial amounts of research funding. They obviously have high symbolic value. In a few cases these initiatives have also been linked to promotion of gender equality. The expert group tried to obtain data on the gender distribution. In addition, in some countries, there are highly prestigious research prizes, including substantial monetary awards, and these were also included in this mapping exercise. This section also discusses the results of the first round of the new European funding instrument for excellent researchers, the ERC grants.

Some excellence initiatives are not directly linked to research funding but are noteworthy to mention in this context, due to their gender dimension. In **Germany** a recent initiative to promote excellence in science ('Excellence Initiative') supports the creation of larger research networks ('Clusters of Excellence') and graduate schools. It was explicitly designed to 'strengthen the strength' of both universities and research institutes in order to improve the academic achievement of the German research system at large. The initiative strengthened the general policy orientation related to gender equality in research and higher education: competing universities and research institutes had to depict in detail how goals of equal opportunities for female scientists are implemented in their proposals.

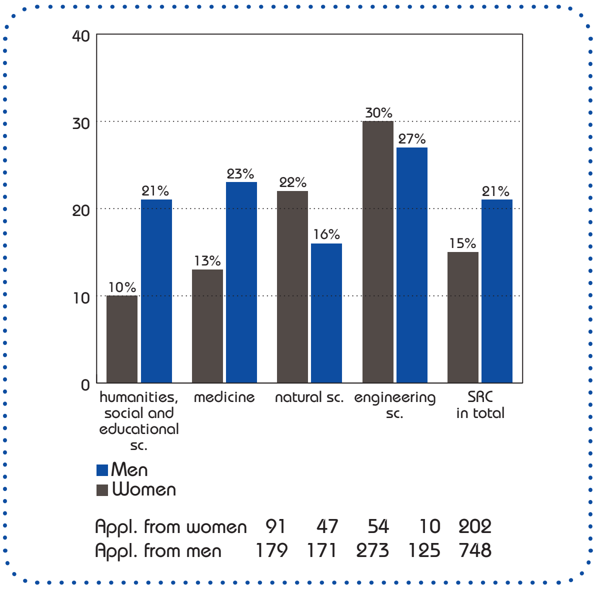
5.2.1. Prestigious grants, positions and prizes

In **Sweden**, new large 'research environment' grants, called Linnaeus grants, worth up to about EUR 1 million annually over ten years, were set up in 2006 by the Swedish Research Council. In 2006 the 202 female applicants had a lower success rate, 15 %, than the 748 male applicants, 21 %. The probability that this difference was due to chance alone is 12 %. Also, the share of women applicants for Linnaeus grants was 21 %, lower than for other types of grants and lower than the share of women among professors/associate professors with doctorates (30 %) at Swedish higher education institutions in 2006. The applications were evaluated by international experts only.

As can be seen in Figure 4 below, the success rates for women were considerably lower than for men in humanities, social and educational sciences and in medicine. In natural sciences and engineering sciences the success rate for women was higher than for men. Moreover, a study of the career-age distribution reveals that women applicants with high career-age were few and had little success. Encouragingly, the success rates were about the same for women and men applying for Linnaeus grants in 2008.

Figure 4.

Success rates for men and women – Swedish Linnaeus research environment grants 2006



Source: Swedish Research Council

In some countries, highly prestigious professorial level top positions are funded by the national research funding organisations.

The **French** ANR annually awards well-funded 'Chairs of excellence'. Disaggregated data on success rates were not obtained but the lists of awardees are published. There were no women among the 5 senior and 10 junior awardees in 2005. In 2006, there was 1 woman out of 6 (17 %) senior awardees and 3 out of 8 (38 %) juniors and in 2007 none of the 3 seniors and 2 (14 %) of the 7 juniors were women. In 2008, there were 2 women out of 15 awardees (13 %) – the list does not distinguish the level for that year.

The Royal **Netherlands** Academy of Arts and Sciences KNAW runs a prestigious programme for Academy Professorships. Every year the Academy appoints five eminent senior researchers as Academy Professors. This programme has two aims, firstly, to release senior scientists aged 54-59 entirely from administrative and management tasks for a period of five years at the end of their careers. This enables them to devote all their time to research and training young researchers. Secondly, new research leaders are appointed to replace the Academy Professors in the same or similar fields of science or scholarship. The Academy's total contribution to a five-year Academy Professorship amounts to EUR 1 million. The Boards of Dutch universities are invited to submit each a maximum of two motivated nominations per year for an Academy Professorship. Over the past few years, 25 researchers were appointed as Academy Professors, of which only two have been female.

In **Finland**, the Academy Professor of the Academy of Finland is the most prestigious research position in the country. The appointment is made for five years or (exceptionally) with tenure. One of the Academy Professorships, the Minna Canth Professorship, is specifically targeted for Women's Studies (but not earmarked women only). The Academy encourages both men and women to come forward. However, the proportion of women among current Academy Professors is 15 %, and the proportion of women has been declining during the recent years, despite the equality efforts of the organisation. The proportion of women among Academy Professors is notably smaller than their proportion among professors in Finland (23.5 % in 2007). In 2005-2007, 15 men and one woman were appointed to an Academy Professorship. Success rate for men was 13 %, but only 3 % for women (totally 144 applications). However, the proportion of women among applicants was 21 %, close to their proportion in the pool, among professors. External peer review is used, but the research councils have a strong role in gatekeeping the entry to the final shortlist. The initial short-listing of the candidates is performed by the research council itself, without external peer review. Research councils are not bound to consider only those candidates who have come forward. Only the candidates short-listed by the research council are requested to submit a full application, which is subsequently peer reviewed externally.

In **France**, a similar prestigious scheme, the Institut Universitaire de France (IUF), created in 1991, provides funding and reduces teaching duties for University teachers at both senior and junior level. (Junior candidates can be up to age 40, with an extra year per child for maternity or parental leave.) IUF monitors its success rates and experts well and explicitly encourages female candidatures saying it aims at parity among candidates of equal quality. Nevertheless, in 2008, only 7 women out of 44 were appointed in the senior category and 17 out of 59 in the junior category. (11) Success rates are not strongly imbalanced but application behaviour is problem.

Prestigious scientific prizes and awards can include substantial amounts of funding. In French-speaking **Belgium**, FNRS awards several prizes. The 'Prix scientifiques quinquennaux' (EUR 75,000) have been awarded to 32 men and no women since 1956. It also awards a biomedical prize, the Inbev-Baillet Latour Health prize (EUR 200,000). Its scientific committee is composed of four men. Prize winners from 1979 to 2007 include 18 men and 1 woman. In Flanders, FWO Odysseus Programme is a prestigious programme to encourage researchers coming from abroad to pursue an independent research career. They receive from EUR 400,000 to EUR 1.5 million per year. In 2007, nine researchers were awarded of which only one woman. Younger researchers can receive from EUR 100,000 to EUR 200,000 per year. In 2007, only men were awarded.

In 2008 the **Bulgarian** Ministry of Education and Science awarded 11 scientists and/or scientific teams with the State Prize Pythagoras for their contribution to science in different categories, including the category 'the most successful woman in science'. Four women scientists and seven men scientists received the Pythagoras award for 2008. The amount of this prestigious award varies from EUR 2500 to EUR 5000 depending on the prize category.

(11) The IUF recruitment jury strongly protested in 2008 because 22 extra laureates were named by the Minister of Research without having been selected by the jury (*Libération*, 6 Oct. 2008).

In the **Czech Republic**, the Academy of Sciences (AV CR) gives out every year: two or three awards for outstanding scientific results of major significance (accompanied by 100,000 CZK, 1 CZK = EUR 0.036), three awards for young researchers (to 35 years of age) for outstanding achievements, and two or three awards for especially successful solutions of programme and grant projects. During the last three years, only men (12 in total) received the awards for young researchers. The other two types of awards were also given to teams mostly headed by men.

The AV CR also awards an academic prize Premium Academie 'to support exceptional research personalities'. It is awarded for 6 years and accompanied with a purse of up to 5 million CZK. In 2007, four men and no woman received the prize. Four J. E. Purkyne fellowships are awarded each year for up to 5 years with a subsidy of CZK 1.05 million a year 'to attract outstanding creative scientists from abroad'. Since 2004 when the fellowships were first awarded, only men (12 in total) have received them. Finally, the AV CR also gives out the Otto Wichterle Award 'to stimulate and encourage selected, exceptionally outstanding, promising young scientists'. As Table 19 shows, men predominate (87 %) among the awardees.

Table 19.
Otto Wichterle Awards by area of science

Year	Sciences on Non-living Nature		Sciences on Living Nature and Chemistry		Humanities and Social Sciences	
	Men	Women	Men	Women	Men	Women
2007	7	-	8	1	4	-
2006	10	1	10	1	6	-
2005	8	1	7	1	3	1
2004	5	2	5	4	7	1
2003	7	2	14	1	3	-
Total	**37**	**6**	**44**	**8**	**23**	**2**

A highly prestigious **Dutch** prize is the Spinoza prize of the National Research Council NWO. The Spinoza Prize is a personal award for top researchers with international reputations. NOW requests selected persons to nominate candidates for this prize. A maximum of four prizes are awarded annually. The winners each receive EUR 1.5 million to spend on research of their own choice for five years. A NWO Spinoza Prize is an honorary award, but above all an incentive to promote research. NWO requests nominations of no more than two candidates each from: the rectors of universities, the chairmen of the Science and Humanities Divisions of the Royal Netherlands Academy, the president of the Netherlands Academy of Technology and Innovation, the chair of the National Network of Female Professors and the chairs of the NWO Division Boards. They are specifically requested to take female candidates into consideration. The Governing Board decides to whom the prizes will be awarded on the advice of the Spinoza selection committee. The nomination procedure is entirely confidential; nominated candidates are not informed. Criteria are stated on the website. From 1995 up to 2007, all in all 48 top researchers have been awarded of which seven have been female researchers.

In **Germany** the DFG awards several scientific prizes, some of them with a very high reputation and considerable extra-funding. All laureates are listed on the website of the DFG. Decisions on the laureates are made by the DFG joint committee based on proposals of nomination committees. The most prestigious prize is the Leibniz prize, awarded each year since 1985. The prize is endowed with up to EUR 2.5 million. In 2002-2008, 77 scientists have been awarded, among them 10 women (13 %). The Maier-Leibnitz-Prize acknowledges outstanding achievements of younger scholars. The prize is EUR 16,000. 42 scientists have been awarded, 11 of them women.

In **Switzerland** the two most prestigious scientific prizes are the Marcel Benoist Prize (for well-known scientists in mid-career), and the National Latsis Prize (for young scientists); both worth 100,000 Swiss francs. The National Latsis Prize is awarded by the Swiss National Science Foundation on behalf of the Latsis Foundation. The

Marcel Benoist Prize has been awarded exclusively to male scientists in the past 30 years. Of the 22 researchers honoured by the National Latsis Prize (in existence since 1984) six are women.

5.2.2. A comparison with prestigious European grants – the ERC

Along with these highly prestigious grants and prizes, it is enlightening to make a comparison with the new prestigious European funding instruments (12). The European Research Council (ERC), created in 2007, is 'the first European funding body set up to support investigator-driven frontier research'. It was given a budget of EUR 7.5 billion over 7 years, about 15 % of the overall budget of the EU's Seventh Framework Programme. An independent review of ERC structures and mechanisms is due to be carried out in 2009.

The creation of the ERC was considered as highly important by the scientific community, which felt it would have more control over its scientific policy, indeed based on a 'bottom-up' model, than it had over the EU Framework programmes. ERC indeed claims to have excellence as its sole criterion for funding. Unfortunately, part of its 'freedom' apparently includes escaping gender constraints or targets. (13)

The ERC has a Scientific Council (SC), which establishes the overall scientific strategy of the ERC, including the annual work programme where the calls for proposals and the corresponding funding rules and selection criteria are defined. It also supervises the peer review and project selection processes and the selection of peer reviewers. According to the Commission Decision that created it, 'The Scientific Council shall consist of representatives of the European scientific community of the highest repute and with appropriate expertise, ensuring a diversity of research areas, who shall act in their personal capacity, independently of political or other interests.' (2007/134/EC). No mention of any need for gender balance appears in the text.

The gender balance of the ERC gatekeepers is poor. At its creation, the SC included only 5 women among its 22 members (23 %). The disciplinary Panel Chairs and members (10-15) are selected by the SC. For the first round of ERC Starting grants, panel chairs included 5 women out of 20 (25 %) and for the Advanced grants for senior researchers, 5 women out of 25 (20 %). The names of panel members were published in a single list, mixing all panels, which does not allow disciplines to be distinguished.

The panels ensure a first stage of evaluation, retaining about twice to three times the number of candidates that will finally be funded. In the second stage, they are assisted by external reviewers (the ERC guaranteeing a review by at least 3 persons, reviewers or panel members). For Starting Grants, the candidates are interviewed. The panel members discuss the reviews and rank the proposals, and an ethical review is included if necessary. Feedback of reports is provided to applicants and a procedure for redress exists if there is an indication that there has been a shortcoming in the way a proposal has been evaluated. Lists of reviewers are supposed to be published but apparently this has not yet been done.

Evaluation criteria concern the track record of the Principal Investigator (as well as her/his 'intellectual capacity and creativity' for the Advanced Grants), the innovativeness, potential impact, methodology and the 'high-gain/high-risk balance' of the project. In the second stage, the quality of the research environment is also evaluated.

Starting grants were originally open to candidates 2 to 9 years past their PhD. This range has been later reduced to 3 to 8 years. The limit is waived for maternity leave (1 year per child born after the PhD award) and paternity leave (requiring proof of actual time off, with a maximum of 1 year per child born after the PhD).

The results of the first round of selection are now known for both schemes. For the first stage of the Starting grants, peer reviewers included 21 % women. Women fared poorly in the first stage: they represented 30 % of all

(12) Sources: Interim results of the first ERC Starting Grant competition, erc-stg-statistics-stage1-20071023_en, Annual Report 2007, ERC Press release 26 June 2008, ERC communication to the expert group.

(13) No notions of gender balance or avoidance of discrimination, in whatever form, appear in the detailed discussion of the criteria to be independently reviewed (i.e. scientific excellence, autonomy, efficiency and transparency) in the Commission's Communication on the forthcoming review of the ERC (COM (2008)526).

eligible candidates but only 24 % of grantees. This average drop is mainly due to the life sciences. As for the national funding schemes, the probabilities that the differences in success rates are due to chance were calculated. For the first stage, the probability is less than 0.0006.

Table 20.

ERC Starting Grants, success rates by gender

First stage	Men	Women	Total
Number of applications	6 417	2 750	9 167
Number retained	427	132	559
Success rate	6.7%	4.8%	6.1%
	$p<0.0006$		

Second stage	Men	Women	Total
Number retained	423	130	553
Number funded	147	54	201
Success rate	34.8%	41.5%	36.3%
	$p<0.25$		

Source: ERC

Overall success rates, at the end of the process were extremely low: total 3.3 %; women 2.9 %; men 3.4 %.

For the Advanced grants, which received a more moderate number of applications, gendered statistics have only partially been published (November 2008). Information on the gender distribution of peer reviewers and success rates per gender are still missing. The most striking observation is that women represented only 14 % of the applicants – less than half their proportion among women researchers in the EU (ERC Press release 26 June 2008).

Clearly, gender balance needs to be improved in ERC procedures, and women, particularly at Advanced level, need to be encouraged to apply.

We have also briefly examined the Marie Curie programme. The programme used as external experts 42 % women and 58 % men, both on International Outgoing Fellowships and on Intra-European Fellowships. For Industry-Academia Partnership and Pathways, there were 33 % women and 67 % men. This demonstrates that it is possible to identify and recruit female evaluators within the international research community.

Success rates are very similar between men and women. For instance, among the 1672 beneficiaries of MC Intra-European Fellowships, the largest instrument, 40.1 % of the candidates were women and 40.9 % of the grantees. The proportion of female applicants is higher than for the ERC Starting grants, but more importantly, they are as successful as men at this early career stage. It is noteworthy that the Marie Curie programme has an active gender policy, both concerning evaluation and contracts passed with host institutions.

In conclusion, it appears clear that even the most gender-aware countries in Europe do not escape strong gender imbalance at the level of highly prestigious grants, positions or prizes. That this should also be the case for the new ERC instruments is a matter for concern.

5.3. Application behaviour

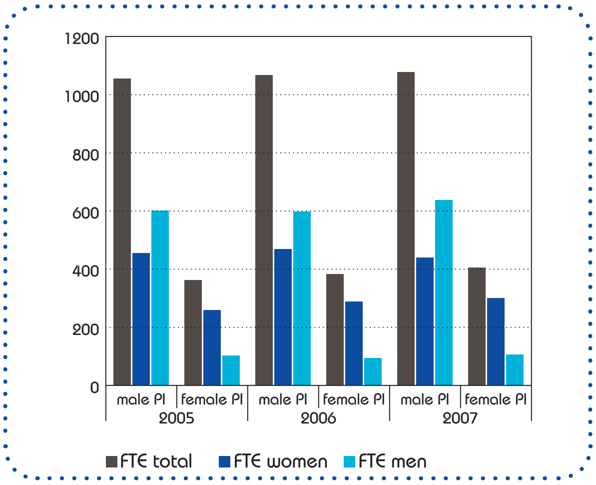
Women are a minority among researchers in most of the 33 countries explored in this report. They are an even smaller minority among the applicants for competitive funding in all countries, a result which is in line with earlier research. In other words, women are less likely to apply for funding than men. The reasons for this are undoubtedly complex but rarely studied. The low application rates are possibly linked to such issues as gendered social support in research careers, integration and exclusion dynamics related to informal and formal scientific networks and gendered division of labour in research groups and university departments (see, e.g., Sonnert and Holton 1995; Husu, 2001). Very little research was in fact identified on funding application behaviour, generally or from a gender perspective, relating this to a broader and more comprehensive career approach.

Application behaviour concerning a certain grant scheme can be explored by comparing the number of applicants to the pool of potential applicants. However, this pool is not always easy to estimate. Applicants can be monitored by different criteria, e.g. age or academic/career age, or position and rank, but this kind of monitoring appears to be conducted only rarely. The expert group was able to collect information on application behaviour in some cases, which has allowed comparing the likelihood for a woman or a man to apply for funding. Rough estimations were made comparing the numbers of men and women who apply with the numbers of potential applicants – generally the populations of academics in the discipline were taken. In some countries, in the funding systems examined, the ratios were similar, indicating that women were roughly as likely to apply as men. This was the case for the funding programmes examined in Denmark. It was, too, in Sweden, except in medical sciences where the proportions for women were only about 75 % of those for men. The proportions of women were approximately 75 % of those of men in Austria and France, 50 to 80 % in Germany (medical sciences were again the lowest, social sciences the highest), 50 to 100 % in Norway (medical sciences were the lowest, along with agricultural sciences, humanities the highest). In Slovakia, the gender difference was larger, the chances of a woman applying being about 30-40 % of that of a man. These are obviously very rough estimations.

The Wellcome Trust study (Blake and La Valle, 2000), based on a wide UK survey of academics, gave a far more precise estimation of the ratio. There, the proportion of women having applied during the 5 years under study was 85 % of that of men (50 % of the female respondents had applied during the period and 59 % of the male respondents). Clearly, there is a widespread problem in Europe concerning the propensity of women to apply for funding. Again, further research is urgently needed to explore this phenomenon, to understand the reasons and to develop counter-strategies to encourage women to claim their share of funding resources.

What role does the gender of the Principal Investigator (PI) play in research group formation? Very little data were obtained on the gender compositions of the funded research teams, since the gender data obtained usually concerned the gender of the PI only. From the Academy of Finland, data was obtained on the gender composition of the funded research teams by gender of the PI in general research project funding, as well as targeted (programme) funding. An interesting gender pattern was revealed. The majority of all PIs of the research teams funded were male. The majority of researchers in the research teams led by male PIs were men, although a substantial proportion of women were employed in their projects. The majority of researchers of the teams led by a female PI were women (see Figure 5 on general project funding; the pattern is similar for targeted funding). The result may be related to gender segregation of disciplines at least to some extent. In any case, the results suggest that increasing the proportion of female PIs may have a positive cumulative effect on recruiting more women into research.

Figure 5.
Women and men employed in research projects by gender of the Principal Investigator, Academy of Finland general research project funding 2005-2007, full time equivalents (FTE)



Source: Academy of Finland

Trust in the system may influence application behaviour. In **Germany**, experts praise the evaluation system of DFG as highly objective, reliable and based on the built-in checks and balances (Neidhardt, 1988; Hartmann/ Neidhardt, 1990). A recent reform of the evaluation system even improved the self-binding quality standards (Koch, 2006). Interestingly, according to a survey, the views of junior researchers who received a research fellowship were divided by gender on the issue how the criteria of excellence are met in the actual evaluation system. Women are significantly more sceptical when they rate the system's standards than men. This result is rather striking since the actual success rates do not remarkably differ by gender in Germany. Thus, the very image of a gender-biased system might prevent and discourage applications from women, even when no evidence of gender bias has been found in the system itself.

6. Conclusion and Recommendations

6.1. Conclusions

The gender challenge in research funding is multifaceted and needs to be addressed with a broad and innovative policy agenda. It concerns stakeholders belonging to many categories: researchers as applicants and recipients of funding; those who set the funding agenda, review and evaluate applications, or decide on funding; management and administration of the funding organisations; and policy makers deciding on R&D policy and funding priorities. The gender challenge concerns male dominance in decision-making about research priorities and attribution of funding, lack of gender monitoring and of general transparency of the evaluation process, low application rates of women, and difficulties in reconciling research and private life. From the perspective of political decision-makers and citizens, the gender challenge concerns the accountability of the use of public funding allocated for research.

European countries show large variation in terms of national and organisational policies related to gender in research funding. This variation is clearly linked to more general societal gender contexts rather than to the proportion of women in research. A group of countries with long-term, more recent or very recent proactive approaches could be identified, as well as another, large and heterogeneous group, which can be described as relatively inactive in this area. Among the most proactive countries with advanced policies and measures, three subgroups were distinguished: firstly, the Nordic countries, global gender equality development leaders with long embedded traditions in gender equality promotion; secondly, a group of newly active countries with high research activity but very poor representation of women in research: Austria, Germany, Netherlands, Switzerland and Flanders, and finally, the UK, Ireland and Spain. The last three countries have more women in research than the newly active ones but have become active much later than the Nordic ones. A common feature most of these proactive countries share is that the overall gender gap in society is relatively small from a global and a European perspective, measured by the Global Gender Gap index by the World Economic Forum, and that the national governments have shown strong political will to promote gender equality in research.

The other group, quite large and heterogeneous, includes the remaining countries, both old and new EU member states as well as some associated countries. They can be characterized as relatively inactive when it comes to gender equality in research funding. These countries show little initiative in monitoring gender balance or promoting gender equality in research in general. Most of them have a relatively large societal gender gap. Some have among the highest proportions of women in HE research in a European comparison, some average and some less than average proportions. Although the national governments in these countries have shown little initiative, if any, to promote gender equality in research, some recent positive developments could be identified.

The key national funding organisations, the main focus of this report, also vary in their approach to gender equality issues. Several national research councils have adopted a very proactive role. These include the FWH in Austria, the Academy of Finland, the German DFG, the SFI in Ireland, the NWO in the Netherlands, the Norwegian Research Council, the Swedish Research Council, the Swiss SNSF, and the UK Research Councils. Many of these have established more or less permanent infrastructures to monitor and promote gender equality in research funding, launched gender equality action plans with targets for gender balanced representation, set up specific measures to promote women in research, and conducted or are planning in-depth studies and monitoring activities from gender perspective.

Specific actions or instruments to promote gender equality in research funding have been designed and implemented by the same national funding bodies in Austria, Germany, Ireland, Netherlands, the Nordic countries, and Switzerland.

These actions include encouraging women to apply in the funding calls, targets for proportion of women funded, positive action in case of candidates with equal merits, career phase targeted measures to support women researchers, measures promoting work-life balance, and measures promoting institutional reforms addressing gender inequality.

Research funding systems and organisations of today are constantly monitored from many perspectives, both nationally and internationally, by a variety of indicators. However, these kinds of mainstream monitoring activities often appear to completely lack a gender perspective. For example, in many cases the success rates in funding are regularly monitored and published but gender of applicants and awardees is not followed up and success rates by gender not calculated, or this data is not published.

A further word of caution has a place here. This report may give a partial and perhaps excessively positive picture of the national situations. One can assume that major public funding organisations, as focused on in this report, may be more engaged in advanced activities than is generally the case nationally. However, the major funding organisations can serve as highly visible examples of good practice, which other funding organisations in their countries may seek to emulate.

Transparency of the funding systems could be improved in many funding organisations. However, the expert group found a number of examples of good practices, such as the UK EPSRC recruitment of evaluators and reviewers by extensive and open consultancy, and the Dutch NWO complaint and appeal procedures, which are used to monitor transparency.

In most countries covered by this report, decision-making and other gatekeeping of research funding, such as participation in evaluation and peer review, continue to be dominated by men, in some settings overwhelmingly so. All-male boards, committees and evaluation panels still exist in many countries. This is also the case even in some national settings where the proportion of women in research is high. Even if gender composition of evaluators has not been shown to affect systematically the success rates by gender, it may influence what kind of research is prioritized and funded, as well as on the gender equality policies of the funding organisations. Lack of women among gatekeeping positions of research funding organisations also gives the image of an organisation unwelcoming to women. Furthermore, the absence or heavy under-representation of women among evaluators and decision-makers means that women researchers are offered fewer opportunities to gain valuable understanding of the research funding system, seen from inside, which undoubtedly would promote their own success.

Peer review is used practically everywhere in evaluating the funding applications but how the peers are recruited often remains opaque. International evaluators are increasingly called upon. Evaluation processes and evaluation and funding criteria are frequently explained on the websites of the funding organisations. Evaluation criteria consist of scientific quality criteria of the researchers and project, pertinence criteria concerning the funding scheme and often national and social relevance criteria. Gender is only rarely explicitly mentioned among them.

Only in a handful of countries is gender monitoring of major funding organisations regularly conducted and the monitoring results published: the national funding organisations in Germany, Netherlands, Sweden and Switzerland do this most comprehensively. Data availability by gender is the first cornerstone of gender monitoring. In earlier EU mapping exercises where data on research funding had been collected by gender, many data gaps were identified. This expert group concluded that data on funding success by gender was unavailable from only a few countries out of the 33 covered: French-speaking Belgium, Croatia, Cyprus, the Czech Republic, Greece and Hungary. Data available from the UK was very partial. Only data from 2000 was available from Israel, not disaggregated by discipline, and gender data by discipline was not available from Austria, Luxemburg and Malta.

Systematic time series by discipline and funding instrument were not available from the majority of countries to allow analyses of long-term patterns. Based on the available data, one cannot conclude that women's success rates are systematically lower than men's. Nevertheless, in some funding systems and some disciplines, they can be either significantly lower or, less frequently, significantly higher. This raises the question of whether, in an ideal system, success rates should be equal, or whether those women who apply, particularly once they are advanced in their career, are a more selected group of exceptionally high achievers, survivors of an obstacle course who can be expected to perform better than men.

The proportion of women applicants is lower than the proportion of potential applicants in practically all funding systems and most disciplines where this could be estimated. Surprisingly little research exists on application behaviour in general and especially on its gender patterns. Most funding organisations do not monitor the pool of potential applicants by gender. Much more attention should be paid to this point, which is probably one of the key mechanisms by which women lose ground in research careers.

A review of the literature pointed to the possibility that success rates are lower for women at post-doc levels than at more advanced levels. Data obtained were not sufficient to resolve the question but it is clear that more attention should be paid to data collection on post-doctoral programmes.

Very strong gender imbalances were noted among the awardees of highly prestigious grants, positions or prizes in many countries.

To encourage the funding organisations and other stakeholders to take the gender challenge in research funding seriously in practice and take action, the expert group has provided a number of recommendations, flagging some good practices, and outlines future research themes.

6.2. Recommendations

Take the gender challenge seriously

National resource centres on gender in research (Ministry units, information centres, national committees) should be established and maintained to support and facilitate gender equality promotion in research funding among stakeholder organisations. Good examples are the German Centre of Excellence Women and Science, Norwegian National Committee on mainstreaming gender in research and the Czech National Centre on Women in Science.

Funding organisations should **establish a permanent structure** for monitoring gender equality in their activities. The structure should report to and be **supported** by the highest level in the funding organisation, and be given **adequate resources**.

Funding organisations should make **action plans** on how they promote gender equality in their funding activities. National funding organisations in Austria, Finland, Germany, Norway, Switzerland, Sweden and the UK are examples of organisations actively engaged in equality planning.

Funding organisations should consider initiating **specific actions** to promote gender equality (e.g. returner schemes after career breaks, provisions improving work-life balance, etc.). Examples on good practices are presented in section 3.2.

Research on obstacles to gender equality in research should be encouraged and funded at European and national level.

Women scientists' organisations, stakeholder organisations, trade unions, etc. should be **consulted** when designing and evaluating policies and measures to promote gender equality in research.

National and international **networking** of funding organisations should be used to exchange good practices in promoting gender equality.

Ministries responsible for research should consider providing **institutional grants** supporting universities to improve research environments for women. Science Foundation Ireland Institute Development Awards and US ADVANCE grants are examples of this type of measures.

Increase funding applications from women researchers

Women should be especially **encouraged** to apply in the funding calls.

Training and advice in writing funding applications should be actively proposed.

Measures to improve and facilitate **work-life balance** should be integrated in all funding forms. Mobility grant schemes should take into account and compensate for additional costs for mobile researchers with family obligations.

Biological age should be replaced by **career age** (time from completion of doctorate) when assessing career phase of applicants.

Maternity and parental leave should be taken into account by counting off at least one year by child when assessing career age.

Application behaviour should be **monitored** and **researched**. One good model is the Swiss SNSF GEFO study (Leemann and Stutz, 2008).

Improve gender balance among the gatekeepers

All decision-making bodies of funding organisations should have **gender balance**, with at least **40%** of each gender.

The proportion of women among evaluators and reviewers should be increased to attain at least **40%** of each gender.

To identify and recruit more female evaluators and reviewers, **databases** of women scientists, and requests for excellent scientists and stakeholder organisations to suggest female evaluators should be used.

Monitor gender data and publish the results

Funding organisations should always **collect data** on gender of **applicants** (including principal investigators and teams), **grantees** and **evaluators** as a part of the application and funding process.

Funding organisations should make their gender monitoring data **publicly available** on a regular basis on their websites, publications and annual reports. In particular, success rates, evaluated according to numbers of applications and to amounts of funding, should be published by gender. An example of informative presentation of success rates by gender is given in Table 21.

Pools of **potential applicants** should be estimated to assess whether women apply for funding less frequently than men.

Monitoring should be conducted **by major disciplinary fields**, because of large variations in gender relations across disciplines.

Gender data should be collected and presented in long-term **time series** to enable assessing trends and development over time.

Specific **gender monitoring studies**, both qualitative and quantitative, should be conducted. These kinds of studies have already been conducted in Austria, Germany, Netherlands, Sweden, and Switzerland.

In gender monitoring studies, the gender composition of **teams** should be observed as well as gender of the principal investigator. **The gender impact** of funding programmes and instruments should be analyzed.

Generally improve transparency in research funding

Evaluation procedures, criteria and results should be made **public**.

Procedures and criteria for **recruiting** evaluators and reviewers should be made explicit and published. A good example of high transparency is the UK Engineering and Physical Sciences Research Council EPSRC (see box 1 p31).

More **international** evaluators and reviewers should be used.

Effective procedures to **prevent conflict of interest, unethical behaviour and any form of discrimination** in decision-making or peer review should be established. In codes of conduct for all involved in funding decisions, gender perspectives should be integrated, as in the Vademecum of the Netherlands Research Council.

The applicants should receive extensive evaluation **feedback** in writing.

Real **grievance** procedures should be established and grievances should be regularly monitored.

Table 21.
Model for presenting success rate data by gender: Icelandic Research Fund project funding

Success rates according to sex of principal investigator

Research Fund 2007	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities		Total male	Total Female
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI		
number of applications	55	20	36	3	42	20	4	2	24	16	26	17	187	78
number funded	15	6	12	0	8	8	0	1	6	4	7	5	48	24
Success rate (%)	**27.3**	**30.0**	**33.3**	**0.0**	**19.0**	**40.0**	**0.0**	**50.0**	**25.0**	**25.0**	**26.9**	**29.4**	**25.7**	**30.8**
Amount applied for	176,050	94,576	103,333	7743	164,520	72,029	13,912	3346	56,572	46,614	88,766	40,778	603,153	265,086
Amount granted	47,040	25,974	34,620	0	20,440	29,890	0	1150	9290	11,500	23,900	10,500	135,290	79,014
Success rate (%)	**26.7**	**27.5**	**33.5**	**0.0**	**12.4**	**41.5**	**0.0**	**34.4**	**16.4**	**24.7**	**26.9**	**25.7**	**22.4**	**29.8**

Research Fund 2006	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities		Total male	Total Female
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI		
number of applications	59	18	38	8	39	23	1	1	24	31	29	14	190	95
number funded	21	4	12	3	11	5	0	1	6	9	9	4	59	26
Success rate (%)	**35.6**	**22.2**	**31.6**	**37.5**	**28.2**	**21.7**	**0.0**	**100.0**	**25.0**	**29.0**	**31.0**	**28.6**	**31.1**	**27.4**
Amount applied for	192,500	65,220	135,936	28,298	141,200	91,481	2000	4950	50,585	76,868	74,864	32,530	597,085	299,347
Amount granted	41,375	18,700	43,030	7995	28,365	18,330	0	2500	9997	17,831	15,680	8890	138,447	74,246
Success rate (%)	**21.5**	**28.7**	**31.7**	**28.3**	**20.1**	**20.0**	**0.0**	**50.5**	**19.8**	**23.2**	**20.9**	**27.3**	**23.2**	**24.8**

Research Fund 2004	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities		Total male	Total Female
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI		
number of applications	38	8	40	8	39	18	13	4	26	11	28	17	184	66
number funded	22	6	18	3	18	8	4	2	11	5	8	10	81	34
Success rate (%)	**57.9**	**75.0**	**45.0**	**37.5**	**46.2**	**44.4**	**30.8**	**50.0**	**42.3**	**45.5**	**28.6**	**58.8**	**44.0**	**51.5**
Amount applied for	74,560	17,600	111,492	27,090	127,079	40,662	60,356	15,801	47,786	17,972	69,205	35,980	490,478	155,105
Amount granted	36,550	7700	46,080	9300	58,200	19,500	9,350	3150	18,700	6500	22,600	19,500	191,480	65,650
Success rate (%)	**49.0**	**43.8**	**41.3**	**34.3**	**45.8**	**48.0**	**15.5**	**19.9**	**39.1**	**36.2**	**32.7**	**54.2**	**39.0**	**42.3**

Research Fund 2003	Natural sciences		Eng. and Technology		Medical sciences		Agricultural sciences		Social sciences		Humanities		Total male	Total Female
	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI	male PI	female PI		
number of applications	36	17	61	13	50	29	8	12	26	14	35	23	216	108
number funded	11	6	17	3	9	10	1	1	7	4	12	8	57	32
Success rate (%)	**30.6**	**35.3**	**27.9**	**23.1**	**18.0**	**34.5**	**12.5**	**8.3**	**26.9**	**28.6**	**34.3**	**34.8**	**26.4**	**29.6**
Amount applied for	102,733	45,315	197,244	31,700	144,760	62,270	31,115	51,282	54,803	25,415	50,790	40,200	581,445	256,182
Amount granted	27,400	12,850	52,650	5800	18,300	24,400	10,000	4800	11,100	5400	14,050	9500	133,500	62,750
Success rate (%)	**26.7**	**28.4**	**26.7**	**18.3**	**12.6**	**39.2**	**32.1**	**9.4**	**20.3**	**21.2**	**27.7**	**23.6**	**23.0**	**24.5**

6.3. Future research

Practically all the dimensions of research funding examined in this report require better monitoring and more research to improve understanding of the phenomena observed. Comparative international research and studies using long data series would be especially important.

Application behaviour by gender should be studied from a broad career perspective, exploring several types of funding sources, taking into account age, career/academic age, academic position, discipline, and ethnicity.

In-depth studies of women and men applicants and their success rates should be undertaken in different national settings, in different disciplines and at different career stages. Quality indicators, such as bibliometrics but also more reliable methods of evaluating the quality of research production, need to be investigated.

The impact of competitive research funding should be explored from a gender perspective in different national research settings.

Gender impact studies of different funding instruments, such as targeted funding and various excellence initiatives should be conducted. Not only the gender of the Principal Investigator but the gender composition of teams should be taken into account.

Gatekeeping policies and practices in research funding should be studied, including the recruitment of gatekeepers, and the impact of gatekeeping positions on the gatekeepers' own careers and network building.

Cohort studies on academic careers should be conducted, such as the Swedish National Agency for Higher Education (2006) study on the significance of gender and social origin for postgraduate studies and research careers.

Comparative studies on the gender dimensions of different funding systems and national settings should be conducted, including analyses of the impact of specific actions, such as work-life balance provisions.

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List of tables and figures

Tables

Figures

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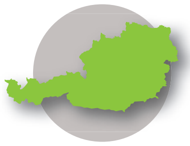
8. Annex: Country reports

Austria

Thomas Hinz



Austria demonstrates the typical pattern of horizontal and vertical segregation of women in science and academia. The proportion of women across scientific disciplines varies with a relatively high number in the humanities and the social sciences, and a small minority of women in the natural sciences. Austria is in the lowest third of EU 25 countries regarding the representation of women in science (She Figures 2006). The Austrian government recently started a programme for 'high potentials' among female scientists ("excellencia', 2005-2010). In general, information on research and science is easily available on several websites (for policy orientation: Bundesministerium für Wissenschaft und Forschung; for research funding in academia: Wissenschaftsfonds FWF). Both institutions provide gender specific data and support further studies on related subjects.

The FWF is the central institution for academic research funding in Austria with a yearly budget of around EUR 150-160 million (2007). In 2005, the FWF created a unit for gender issues (FWF Gender Referat) in order to promote better career prospects for female researchers. The main targets are: safeguarding appropriate data on applications and approvals regarding equal opportunity, promoting the visibility of women in science, promoting chances to combine careers and family, increasing the number of female project leaders and female representation on the FWF board. Austria responded to the low representation of women in science with some unique (nation wide) programmes. These programmes are targeted only at women: Charlotte-Bühler-Programme (1992-2005), Hertha-Firnberg-Programme, Elise-Richter-Programme (since 2005). However, these programmes have only a small share of overall funding (3.4 %, Schacherl et al. 2007).

The evaluation process of the FWF is organised as a peer review. The FWF is structured into departments; in each department two experts of FWF staff handle the administrative procedure together – according to a 'four eyes' principle. The FWF administration chooses reviewers with expertise in the particular field of research, the evaluation process is anonymous and all reviewers are from abroad. The representation of women among the reviewers is 14.7 % (in the number of reviews), similar to the proportion of females in professorships at universities. On the FWF website, applicants can find criteria to assess the proposals (quality of project, qualification of key researchers and career aspects of co-workers, consequences and implications for other disciplines, economy and society). The final decision is communicated to the applicants with the complete written reviews. In general, the evaluation process meets high quality standards.

The FWF publishes basic information on gender specific success rates and evaluates the success rates in extra studies. In 2004, an impact analysis was conducted on FWF projects (Streicher et al. 2004) also considering the sex of the applicants in FWF projects. A multivariate analysis showed that gender (as a variable) does not co-vary with the chances of being funded (Streicher et al. 2004). However, the FWF currently does not publish data on gender specific success rates by scientific discipline. Currently, it is impossible – on the basis of available data – to get a reliable measurement of gender specific application activities.

Figure 1 shows an overall decline of success rates over time, but they do not systematically differ by gender of applicants. Overall, the success rate for male scientists is 43.9 % while the rate for women is slightly lower (42.1 %). Concerning the amount of funding, Schacherl et al. (2007) presume that a large share of resources goes into areas where male scientists dominate.

Given the relatively low representation of women in upper positions and in certain scientific disciplines, all institutions are characterized by a high awareness for gender inequality in general. The representation of women in a highly competitive environment has improved over the last years. Although data are easily accessible, they lack important information, such as gender specific success

rates by discipline and breakdown of funding budgets by gender. Schacherl et al. (2007) conclude that the impact of research funding on gender relations in science needs much more attention.
As mentioned above Austria has established two programmes exclusively targeted at female scientists. Their long term impacts on careers are unclear. More attention needs to be paid to how these programmes work.

Austria:

Success rates by gender (FWF, 1998-2006).

Source: FWF/website, own calculations

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Belgium

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Maaike Romijn

Belgium is unique amongst the EU Member States in that it is the only country where, since the early 1990s, research policies have been decentralised across several regional structures.

In Flanders, women are underrepresented. In 2006 they represented 15.5 % of academic personnel of the Flemish universities (assistant, associate and full professors) and only 5.5 % of all (full and temporary) professors were female. Their situation is somewhat more balanced in the French speaking universities where they represented 21.6 % of the academic personnel and 10.5 % of full and temporary professors.

In 2006, the Flemish minister of Economy, Science and Innovation set out a firm policy for Flemish science to increase diversity. More money is allocated to universities who employ more female professors and attract new academic talent from outside the university and country. In addition the minister also wanted to increase diversity within officially established boards that advise government or individual ministers and introduced a quota of a maximum two thirds of one sex. Funding organisations are also bound to this quota. This quota is monitored by the government, but there are no sanctions if an organization does not meet the quota.

FWO and IWT are the main funding organizations in Flanders. FWO (budget EUR 138,259 million in 2007) is mainly aimed at young researchers, but also has highly prestigious programmes. The Odysseus programme encourages more experienced researchers who established their career abroad to pursue a research career at a Flemish university. In 2007, 9 recognised researchers were granted awards of which only one was a woman. Among researchers with potential, only men were granted awards.

FWO focuses mainly on younger researchers; pre and post doctoral. In the pre doctoral programme women are equally represented, but in the post doctoral programme women are already less represented – whereas one would expect more gender balance. Although FWO does not have specific schemes or programmes for women, they have extensive parental leave of up to one year, also for men.

IWT general success rates are available on the website and in the annual reports, according to grants and disciplines, but not gender, except for the post-doctoral fellowships. According to the annual report in 2006 women represented 31.6 % of all applicants and they were more successful than their male counterparts: 83.3 % were successful compared to 47.8 % for men.

FWO publishes the members of the review panels and seem to be able to meet the quota, although differences occur between disciplines. Before the quota the committees had only 11 % female members. Over the past few years this increased to 25 %. IWT only states that women represent over 30 % of all review panels.

The French-speaking community funds R&D in universities mainly through its basic allocation to universities, part of which goes to research. Project based funding is competitive and is distributed via the Scientific Research Fund FRS-FNRS, the Special Research Fund and the Concerted Research Actions programme. The Walloon region, which has competence for applied research, also has programmes aimed at contributing to economic and social development but publishes no success rates.

The main actor, FNRS (budget EUR 140.8 million for 2008), provides funding for temporary or permanent individual researchers, for research teams and supporting scientific exchanges, and awards scientific prizes. Funding is decided by scientific committees and is non-thematic, according to a bottom-up approach. Evaluation is based on the project's feasibility, its originality, the composition of the team, its scientific environment and the scientific history of the promoters and researchers participating in the research programme under consideration. Both Belgian and foreign experts are responsible for evaluation. 24 % of the members of the scientific committees and the juries are women. FNRS has a charter concerning integrity in research on its website but no mention is made of any sort of possible discrimination. No data on success rates for FNRS are available, even on request. The position of chargé de recherche has an age limit of 32 years. It extended by one year per childbirth.

The FNRS awards several prizes. The 'Prix scientifiques quinquennaux' (EUR 75,000) have been awarded to 32 men and 0 women since 1956. The Inbev-Baillet Latour Health (EUR 200,000) has been awarded from 1979 to 2007 to 18 men and 1 woman. The scientific committee is composed of 4 men.

In summary, the two parts of Belgium are quite different. The French-speaking research community includes more women but, concerning funding, the gender question is not taken on board there as actively as by the Flemish funding bodies.

Bulgaria
Nikolina Sretenova

Bulgaria is among a group of five EU member states (Bulgaria, Cyprus, Hungary, Poland and Romania) who are not yet committed to gender mainstreaming (EC 2008).
The specificity of the Bulgarian research system suggests distinguishing between two different modes of project financing in Bulgaria: institutional non-competitive project financing and competitive project financing.
The funding source of both modes is through subsidies from the annual state budget.
In 2004 the ratio between the non-competitive and the competitive project financing was 90:10 and in 2007 – 70:30. The officially announced target by the Bulgarian government is for the ratio between the two modes of project funding to reach a balance of 50:50 in the coming years.

The National Science Fund (NSF) – a secondary budget-spending unit with the Ministry of Education and Science – is the only national institution for competitive project financing in all fields of science, with open competitions organized on a project and program-based principle. The performance of the NSF is in accordance with the international/EU practice in terms of the announcements of call for proposals, standard application forms, including guide for applicants and criteria for evaluation. The lists of supported projects for each

call/competition by title of the project, institution, name of the coordinator and obtained total score are uploaded on the website of the NSF and are publicly available. However, the size of the awarded grants, the duration of the project and the names of research team members and/or partners are not publicly available.
Since the beginning of 2008, and thanks to new management, the NSF increased the budget five-fold compared to 2005 and improved evaluation procedures. There is a move towards internationalisation of the evaluation/review procedure and re-opening the NSF's database of evaluators. In the 2008 competition round of the NSF, there will be international evaluation of all submitted proposals.

For the NSF 2008 competition (16 opened calls) all proposals are submitted in Bulgarian and in English, and each proposal is allocated to three independent international evaluators as well as to a small temporary (ad hoc) expert evaluation panel consisting of Bulgarian scientists. The names of evaluators are anonymous and they are paid for their service. Gender is not taken into account in the recruitment/selection of evaluators (national and international).
The NSF is not engaged either with gender equality planning or with gender equality monitoring in its activities. However, it was possible to obtain data for the NSF Competition 2007, broken down by the number of submitted and supported projects, by call and by sex of the coordinator from the Department of Scientific Programmes of the Ministry of Education and Science.
During the two rounds of 2007 competition of the NSF 492 projects were submitted of which 195 were supported (i.e. 39.6 % success rate). The female researchers submitted about half as many applications compared to male researchers – 35.8 % vs. 64.2 % respectively. The share of projects with female coordinators of the awarded grants was 40.5 %, with 59.5 % awarded to male coordinators. Therefore the female success rate was 44.9 % compared with the male success rate of 36.7 %.
Unfortunately, information on the actual amount of financing for the awarded grants is not available, so it is not possible to draw conclusions on the allocation of the overall budget.

The competitive project-based financing in Bulgaria is based on a kind of 'young scientist mainstreaming' policy which has been implemented at all levels including the criteria of evaluation of the submitted projects under the announced calls for proposals. The current aim is to reach a balance by age and not a balance by gender in the research projects supported by the NSF. However, young women scientists, being a part of the privileged target group of young scientists, could profit from the current state.

The publicly available statistics on the awarded grants in the 2008 competition of the NSF should appear in 2009 as disaggregated by sex and in more detail so that one can assess whether the positive developments which took place in 2008 affected the female academics and researchers – in particular the young female academics and researchers. In addition the Bulgarian academics and researchers who served as External Expert Evaluators under different evaluation rounds (sub-programs, calls) of FP5, FP6 and the current FP7 comprise considerable national 'evaluation potential' because they had a chance through 'learning by doing' to obtain particular knowledge about the good evaluation practice of the European Commission. This expert knowledge should be exploited somehow on the national level, e.g. through including the CVs of these scientists in the NSF database of evaluators.

Croatia
Jana Blahova

By signing the Stabilization and Association Agreement (SAA) Croatia has committed itself to adjusting its legal system to EU standards in the area of social equality of men and women ([1]). In the area of financing research and technological projects, there are three main institutions ([2]):

- *National Science Foundation* (NZZ) which is the first independent foundation for research activities, in addition to the Ministry of Science, Education and Sport (MSES), and which used to be the only financier of R&D in Croatia;
- *Business Innovation Centre of Croatia* (BICRO) with the task to create, implement and finance innovation policy programmes for the commercial application of science and to foster closer science-industry cooperation between science and industry;
- *Croatian Institute for Technology* (HIT) with the task to finance research technological research projects and to develop the national innovation system.

Public research activities in Croatia are dominantly financed by budget resources allocated by the Ministry of Science, Education and Sports (MSES) through two main channels: institutional funding and research grants.
The important financier of research and research-related activities is the National Foundation for Science, Higher Education and Technological Development (NZZ) established by the Croatian Parliament in December 2001. The basic mission of the NZZ is to promote science, higher education and technological development in Croatia in order to ensure the development of the economy and support employment ([3]).
Members of the Board, the governing body of NZZ, are appointed by the Croatian Parliament. The Board can establish expert panels and standing or temporary committees that evaluate and grade the programmes and projects and give their proposals and recommendations to the Board. The organisational structure of NZZ is as follows:
The Executive Board recommends activities to the Board in terms of Internal Quality Assurance, Public Presentation and Publications and Newsletter.
The International Advisory Board helps and advises the Board in the issues regarding the development of the NZZ.
The Advisory Council consists of 7 panels, developed according to the NZZ priority fields. Each panel consists of five experts (two from Croatia, one from the diaspora, two foreign).

The NZZ supports excellence in research. Currently, the NZZ is funding or has funded the following programmes:

- Support for Croatian scientists in joining European Science Foundation Programmes. The main goals of this programme are to include Croatia in the European research arena.
- Training of doctoral students. The NFS started a few programmes to support the organisation of doctoral studies on the national level.
- Partnership in Basic Research. One of the main goals is to increase non-governmental investment in basic research with investments based on public-private partnerships.
- SCIENCE award. The goal of the award is to promote science and research activities among graduate students-researchers.
- Reform of the educational system in Croatia. This programme supports the transformation of doctoral studies as essential for the further development of higher education and science and for the overall development of the country.
- Program 'Brain Gain' aims to repatriate Croatian scientists living abroad, permanently or temporarily.

The evaluation is conducted in several steps:
1. Administrative verification: The proposals are first verified by the administration. If a proposal does not meet all the requirements, it can be immediately rejected. The applicants are notified about the verification.
2. Evaluation: All the projects that satisfy technical conditions are evaluated by an Evaluation Committee. Members of the Committee independently evaluate the proposals from 1 to 10, according to the official Evaluation Form I created by the Board. Then the Committee discusses the grades and writes grades and comments for the Board in Evaluation Form II.
3. Peer review evaluation: is conducted by independent experts according to peer review principles and Evaluation Form III. This step of the evaluation applies only to the projects that require larger funds.
4. Decision: After the evaluation, the Committee forwards its recommendations and grades to the Board. According to these results, the Board makes the decision about the

funding. The leaders are notified by mail and the list and summaries of the accepted projects are published on the official web pages and in other publications.
5. Reports: Funded researchers submit reports about the realization of the projects. The same Committee meets again in order to evaluate the reports according to Evaluation Form IV. According to the evaluation results the Board may continue, increase, reduce or even stop the funding. Data on success rates by specific programmes are monitored and referred to on a regular basis in annual reports [4].

In order to gather the best Croatian and foreign scientists to evaluate the projects, application forms are available in English since January 2008. All relevant information on calls, its conditions, budget, evaluation process, is available on http://www.nzz.hr.
There are no publicly available data on gender monitoring of the project applicants and successful applicants of funding systems.

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(2) http://cordis.europa.eu/erawatch/index.cfm?fuseaction=ri.content&topicID=35&countryCode=HR&parentID=34, ERAWATCH.
(3) The National Foundation for Science, Higher Education and Technological Development of the Republic of Croatia, http://www.nzz.hr/index.php?lang=en
(4) Annual reports, http://www.nzz.hr/images/stories/nzz/_documents/pub/godinje_izvjesce_2006.pdf

Cyprus

Rossella Palomba

Mostly due to Cyprus' harmonization with the *acquis communautaire* for European Union membership but also to bring legislation into line with relevant international instruments, an impressive number of legislative measures relating to gender equality have been passed in 2002. Although gender policies seem relatively good, little is done to actively promote/implement these policies and generate awareness, such as disseminating information to citizens relating to new legislation or providing information and training to employers, policy makers, and decision makers to effectively implement these measures. So the problem relates most often to implementation rather than the drafting of legislation. Cyprus' gross research and development expenditure (GERD) is currently only 0.4 % of GDP, and three-quarters of this is financed by the government. The research policy is implemented through the Cyprus Research Promotion Foundation (CRPF), which is assigned the task of designing research programmes and approving research projects that are qualified as appropriate. The CRPF organizes periodical funding rounds targeted to specific thematic areas.

CRPF is the main research funding agency in Cyprus. The Foundation has developed several funding programs aiming at implementing high level research in several thematic areas, developing new products and services for the benefit of Cypriot enterprises, promoting the upgrading of the research infrastructure, developing research collaborations and utilizing the human research potential of Cyprus.

Evaluation of proposals is carried out in three steps:

1. The scientific staff of the RPF checks whether the application was correctly completed.
2. Each project proposal is evaluated by a group of experts. The evaluation is based on pre-defined evaluation criteria. A consensus report is completed with the evaluators' comments and marks.
3. The evaluation results are approved by the twelve-member RPF's Board of Directors. No indication is given on the composition of the evaluation committees. In 2001 the Board of Directors consisted of men only.

No data on funding by gender are directly available on the internet or in published documents.

Czech Republic

Petr Pavlik

In 2007, the Czech Republic's government initiated an ambitious reform of the R&D system. The goal of the Government Council for Research and Development (Council), which is charged with setting up a framework of R&D policy, has been to simplify the system of R&D, improve allocation of resources and support collaboration between public research and the private sector. Gender equality has not been taken into consideration during the process. The only initiatives have come from the civil society. Namely, the National Contact Centre – Women and Science of the Sociological Institute of the Czech Republic's Academy of Sciences (Centre) succeeded in convincing the Grant Agency of the Czech Republic (GACR) and the Grant Agency of the Academy of Sciences of the Czech Republic (GAAS) to change some of their age limits to help young researchers reconcile work and private life.

With respect to basic research, the major funding institutions are: 1) the GACR; 2) the GAAS, 3) universities; and 4) individual ministries. The chief distributor of competitive basic research grants, the GACR, awards five types of grants ranging from standard projects to doctoral projects. Applications are evaluated using a peer review system. First, a member of a Discipline Subcommittee (DS), called the reporter, appoints reviewers. At least two (one foreign) evaluate each application. Evaluation criteria cover scientific contribution, methodological soundness, budget adequacy etc. Second, the DS ranks applications based on reviews and its own criteria. Third, the Discipline Committee recommends grants to be funded to the Presidium of the GACR, usually respecting the DS's opinion. Applicants can ask for reviews (anonymous) and submit a complaint to the GACR Control Board.

Reporters wield significant power over the grant process. They select reviewers, instruct them and argue for 'their' cases during DS's meetings. The evaluation process is not double-blind, i.e. reviewers and DS members know the identity of the applicants. The Council is aware of 'ethical problems (manifested in a higher success rate of institutions of members of Discipline Subcommittees)' (Council, 2008b, p. 19).
The same problem might concern gender since women are underrepresented in all the GACR bodies. Names of recipients of prestigious prizes and distinctions suggest as much. For example, the President of the GACR awards three best project awards and one special award. Since 2003, only men have received the President's awards. However, grant awarding bodies do not monitor success rates by gender and honey pot indicators are not calculated. The Centre tries to calculate them on an ad hoc basis.

The grant process and composition of individual bodies of the GACR are publicly available (internet), but the list of evaluators is not. There is nothing to suggest that gender is considered during the appointment process.
Gender equality is not routinely considered in the Czech Republic's research grant system and no gender monitoring is taking place. Gender equality measures adopted thanks to the Centre do not cover the issue of interruption of ongoing grant projects due to parental leave. The GACR handles these cases on an individual basis, which does not allow researchers to plan their careers and personal life (Tenglerova, 2007).

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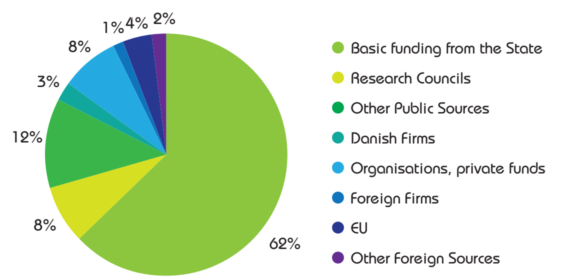
Denmark

Karen Langberg [15],
Carl Jacobsson

Gender equality issues are fairly high on the political agenda in Denmark. Today 38 % of the members of parliament and 37% of the government are women. The Ministry of Gender Equality has overall responsibility for the Equal Status Law and policies to promote gender equality. However, only 12 % of the full professors are women.
The share of GDP used for R&D in Denmark is around 2.5 %. About 2/3 of the Danish R&D is performed by the private sector, dominated by the pharmaceutical industry.
In 2007 most of the universities and some research institutions were merged into six universities of different size, two universities were kept out of the merge. All eight university rectors are men. The public research sector has direct basic funding from the state and a number of other research funding sources as shown below.

Research funding in the Danish public sector 2005



Source: The R&D-statistics, the Danish Centre for Studies in Research and Research Policy

In 2005, the share of women among full professors was 12 % (up from 6 % in 1995), among associate professors 26 %, among assistant professors 39 % and among postdocs 36 %, but there are big differences between the science areas. The largest share of female researchers is found in agriculture and veterinary sciences, followed by medical sciences and humanities. Very few female researchers are found in engineering. The small numbers of women professors have been discussed for years, but strategies on gender equality are still left to the universities. However, an analysis of researchers' salaries showed no significant gender difference when position, age and mobility (from one university to another) were taken into account.
In 2005 a think tank on women in research set up by the government gave recommendations aimed at ensuring a higher proportion of women in science. At national level two recommendations have been implemented. Firstly, the formal barriers for women to stay in contact with their working place during maternity leave have been removed. Secondly, a specific research programme aimed at women researchers was implemented during the period of 2006-2008 with EUR 2 million per year.

The public research funding system was changed in 2003, with four different lines of research funding (see www.fi.dk):

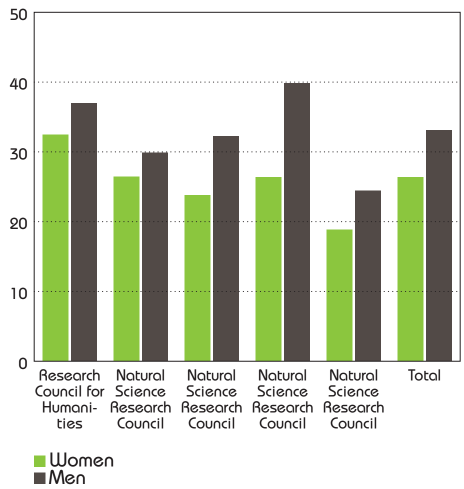
- The *Danish Council for Independent Research* funds research based on the researchers' own initiatives and comprises five scientific research councils.
- The *Danish National Research Foundation* is an independent foundation which funds Centres of Excellence for longer periods of time.
- The *Danish Council for Strategic Research* funds research and provides advice within politically prioritised and thematically defined research areas. There are currently five programme areas. The strategic research programmes are decided by Parliament.
- The *Danish National Advanced Technology Foundation* is an independent body within the government administration that offers grants in the form of co-funding for high-technology research and innovation initiatives and projects.

The proportion of women in scientific boards was 35 % in 2004, surpassed only by Norway, Finland and Sweden with 47-48 % women (source: She Figures 2006).

(15) Sadly, Karen Langberg passed away in October 2008.

Denmark

Rate of success for men and women at the Scientific Research Council within the Danish Council for Independent Research in 2007



Source: Data from the Danish Agency for Science, Technology and Innovation

In 2007 the success rate was higher for men than for women at the Scientific Research Councils in all subject areas (the gender of the Principal Investigator is used). There is information on gender in the Danish R&D statistics. Also, information on gender can be collected for applications to the research councils. Success rates for men and women applicants are not published on the web site of the Danish Agency for Science, Technology and Innovation at present.

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Estonia

Maija Bundule

In Estonia, the gender balance among researchers and specialists is fairly good, unlike the older Member States. In 2006 the share of women among specialists in general was 68.4 %. The feminisation of higher education enrolment has increased during the last 15 years (from 51 % in 1993, and 59 % in 1999, to 69 % in 2007). Now the first signs of this trend are also noticeable in R&D personnel of institutional sectors. From 1996, the share of female researchers has continuously increased, and their number is nearly equal to that of male researchers. In 2007, the share of female researchers was 48 % (42 % in 1996). The share of women drops during a typical academic career. The share of women among Grade C professors in Estonia in 2004 was close to 55 %, the share of women among Grade B professors was 40 % and among Grade A professors 18 %. These numbers are higher than the EU average, and the trend is towards an increasing feminisation rate. As for the top level management of research, there are positive changes. In five out of six public universities one vice-rector or rector is female. The higher level research management personnel in the research policy department of the Ministry of Education and Research is perfectly balanced.

Therefore gender inequality is not perceived as a serious problem in research and the Estonian Ministry of Education and Research has not implemented any special measures to raise the share of female researchers. The Estonian R&D system is built up on values like the quality of research, free competition based on independent evaluation, equal access and treatment. As a result, the success rate of female and male researchers in funding has been nearly equal for a decade.

In 1991 funding of individual projects based on peer-review procedures was introduced by the Estonian Science Foundation (ETF). The proportion of grant funding in overall Estonian R&D funding was increased until 1997 using a step-by-step approach. After 1998 all R&D funding became entirely competitive.

The ETF awards research grants to individuals and research teams on a competitive basis. Project applications are evaluated by external reviewers – national and foreign. Ranking lists of project applications are prepared by the Expert Commissions and final financing lists are approved by the ETF Council, which is the highest decision making body and consists of seven members – a Chair, the Heads of the four Expert Commissions, a representative of the Estonian Ministry of Education and Research and an independent representative of the Estonian scientific community. Four eminent scientists elected by the previous Council for a term of three years as Heads of the Expert Commissions represent, in the Council, environmental and biosciences, culture and social sciences, health, as well as physical sciences and engineering.

The grant applicant must be a Ph.D. holder in Estonia or equivalent and must have published at least three high level publications within the last five years.
As a regular practice of equal treatment, for female grant applicants for a researcher's position or funding, the period of maternity leave is taken into account in the process of evaluation and selection. If the applicant for a grant has been on parental leave in the last five years, the deadline of the publication requirement is extended by the time spent off work. There are no limits concerning the applicants' age or type of organization where the applicant is working, but only organizations registered in Estonia are considered. There are no specific measures for promoting women in research funding. Evaluation is based on its scientific relevance, level of the work of the research team involved and cooperation.

As to the other R&D funding instruments, the last report of the Scientific Competence Council on targeted funding projects (2003-2006) shows that there is a relatively equal number of women and men as members of the projects, at the same time the project leaders are mainly men (~79 %). This tendency continues since among 34 new funded projects (started in 2007) there are 30 men and 4 women among project leaders.

The proportion of women researchers in Estonia is almost the same as for men, but at the same time there is a clear under-representation of women on research boards. Institutions advising the Ministry of Education and Research on research issues include the Estonian Academy of Sciences and amongst its 57 full members (top level Estonian researchers) there is only 1 woman (prof. Ene Ergma), since 2000. Similarly, the Scientific Competence Council has 9 men and no women on its Board (appointed for 3 years by the national government) and less than 10 % women are on its 9 Expert Boards. The Council of the ETF includes 6 men and only 1 woman. In the work of ETF Expert Commissions 42 members (experts representing different research areas) are involved and currently only 10 of these are women. The Research and Development Council, which advises the government on strategic issues of research and development, consists of 12 members, currently all men.

Estonia

Research grants in 2007

Research field	Ongoing grants/led by women	Total No of applicants/ applications by women	Number of approved grants/awards to women	Success rate overall/for women (%)
Environment and Biosciences	83/26 (31.3 %)	110/48	55/24	43.6 %/50 %
Physical Sciences and Engineering	140/15 (10.7 %)	100/16	62/8	62 %/50 %
Health	49/18 (36.7 %)	44/21	24/12	54 %/57.1 %
Culture and Society	83/32 (38.6 %)	74/31	40/14	54.1 %/45.5 %
All projects	355/91	328/116	181/58	55.2 %/50 %

According to the findings of the survey of the Ministry of Social Affairs performed in October 2006 48 % of women (68 % of men) in Estonia say that they have no problem with the higher-paid jobs being dominated by men and half the women (32 % of the men) agree with the statement that men are better suited for management positions.

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Finland

Liisa Husu

Finland is characterized by high research intensity and advanced overall gender equality. It is the most research-intensive country of the EU-27 after Sweden and in the OECD, as measured by the share of the R&D expenditure of the GDP (R&D 3.5 % of GDP since 2000). Women were awarded 50.7 % of the doctorates in 2007. Over half of the HE sector researchers and 23.5 % of full professors are women.

The first country in the world to give women full political rights in 1906, Finland is currently ranked at the top in global gender equality comparisons. Since the 1960s, gender equality has been systematically promoted by the government. Equality between men and women is defined as a basic right in the constitution since 1995. The Equality law from 1986 was amended in 1995 with a 40 % gender quota for public committees and equal bodies. Equality legislation also includes an obligation to equality planning for all employers with more than thirty employees. In 1982 and 1997, national high profile committees on women's research careers performed extensive gender monitoring of the research system. Many universities and the Academy of Finland have been actively engaged in equality planning. In the 2000s the governments have been committed to mainstreaming gender equality. Despite this, relatively low priority and visibility of gender issues can be observed at governmental and ministry level in research policy especially compared to Norway and Sweden. Currently no national body has the task to regularly monitor the development of the research system from a gender perspective.

The most important funding source for basic research is the national research council system, the Academy of Finland, the main focus in this report. It accounts for nearly a quarter of the external research funding in the HE sector. Another key funding organisation TEKES, the National Agency for Technology and Innovation, mainly targets business sector R&D.

The Academy of Finland is a key national stakeholder in science policy and research funding. It consists of the Board and four Research Councils, and issues funding decisions annually worth about EUR 280 million, 16 % of total government R&D spending. The funding instruments include research project grants, research professorships, postdoctoral research posts, research programmes, centres of excellence, and mobility grants. Funding is mostly based on open annual calls, competition and independent peer review, and is always fixed-term.

The Board and the members of the Research Councils are appointed by the national government for a three-year term. Universities, research institutes and key scientific societies are requested to put forward candidates for RC members. In the appointments, a diverse and high level of scientific expertise is sought, and the gender quota of the Equality Act has been applied since 1995, as on other publicly appointed committees. As a result, the Board and all four Research Councils are gender balanced.

The first comprehensive Equality Plan was adopted in 2000, amended in 2005, and an Equality Working Group was appointed for 2005-2007. Management of equality issues is going to be re-organised as part of more general reorganisation of activities. The plan is based on gender mainstreaming and focuses on anti-discrimination and preventing harassment; recruitment and advancement in research career; reconciling work and family; and equal representation among experts. According to the plan, 'research councils make every effort to ensure that the percentage of the minority gender in research post appointments is at least 40 %'. Positive discrimination can be applied if the applicants are equally qualified or only differ slightly in their level of scientific qualification.

A target for gender balance among the reviewers is also included, but has, however, not been reached thus far. Data on applicants, funding decisions and reviewers is regularly collected by gender and the equality plan includes ambitious aims for annual gender monitoring of the funding activities.

Five main criteria are applied in decisions on project funding: scientific quality and innovativeness of the research plan; competence of the applicant/research team; feasibility of the research plan; cooperation contacts; and significance of the project for the promotion of professional research careers and researcher training. Additional science policy objectives are also taken into account, including: promoting the careers of women and young researchers; promoting gender equality in research; developing creative research environments; advancing multi- and interdisciplinary research; supporting the internationalisation of research; supporting Centres of Excellence; promoting research serving the Strategic Centres for Science, Technology and Innovation.

When it comes to eligibility, academic age instead of biological age is applied. An eligibility rule often criticized by potential applicants concerns the Principal Investigator in project funding: the Principal Investigator has to have her/his own salary covered from other sources, which means that researchers not permanently employed or without long fixed-term contracts are in principle ineligible.

Most applications are reviewed by panels of experts, usually foreign scholars. Panels review the scientific quality of the applications ('rating'), and the final decisions are made by the Research Councils, the Board or Subcommittees ("ranking'). Funding applications amount annually more than EUR 1,000 million, but only about one-fifth of this sum can be granted. Not even all the best-rated applications can be funded.

Undoubtedly, the Academy of Finland has had a very positive impact on gender equality in research careers. The transparency of the funding system is relatively high and strict rules on conflicts of interest exist. Transparency could be improved in certain respects. The candidates for the highest positions, Academy Professors, are short listed by the RCs, without external peer review, and only the short-listed candidates are externally reviewed. RC members can apply funding for themselves (according to internal rules once during their term in the RC). The gender monitoring results appear to be effectively used internally but should be made better accessible publicly, by discipline and funding instrument, on the website and in annual reports.

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France

Suzanne de Cheveigné

A slow movement towards more gender equality is taking place in France, but relatively few women are in positions of responsibility. Gender equality policy cannot be considered a priority for French research, although the new law on research voted in 2006 stipulates that nominations in the various committees that it mentions as well as at the heads of government organisations should 'assure a balanced representation of men and women'. Women represent 28 % of all researchers.

In 2005, French interior research spending amounted to EUR 36 700 million which is only 2.13 % of GNP, well below the Lisbon target of 3 %. The funding mechanisms for academic research recently changed, with the creation in 2005 of a central funding agency (Agence Nationale pour la Recherche, ANR). In 2008 it will have committed EUR 955 million in research funding and plans to reach EUR 1 400 million by 2010, which will make it the major source of contractual funding in France. This represents a strong increase in the amount of money for research but also a much larger proportion of competitive funding. Other sources of funding still remain, such as ministries, research organisations (mainly CNRS – Centre National de la Recherche scientifique), NGO's and foundations (particularly for medical research) as well as business sector contracts.

ANR awards a majority of grants following thematic programmes (2/3 of the funding) but also has transversal non-thematic calls and specific calls for young researchers (under 39). This is the only age limit, and it can be moved for maternity or leave for handicapped children. ANR has codified procedures, including a code of conduct, which is better than most other French funding bodies. To evaluate proposals, programme steering committees rely on an evaluation committee (10-25 members), but are not completely bound by its advice. Each project is evaluated by 2 outside experts plus one or two evaluation committee members. A database of experts is being set up. Project leaders can give a list of experts they do not wish to have evaluating their projects. The evaluation committee can audition the project leaders. Evaluation criteria are published with each call. They include mainly quality criteria (of project, of researchers), pertinence to the call and feasibility. Nevertheless, when a satisfaction enquiry was carried out in 2008, the main criticisms concerned a lack of information on selection procedures and on the evaluation criteria.

The gatekeepers in ANR are not well balanced: although its director general is a woman, 7 of its 8 departments are led by men and its council of administration includes only 3 women out of 14 members. Its 'council of perspective' has no women at all among its 9 members. The gender balance of pools of experts is poor: ANR used 17.4 % female experts and had 19% women on its evaluation committees. It has begun to make gendered statistics and privately communicated their first results (on principal investigators and experts, not on amounts of money awarded). Some appeared for the first time in their 2007 report. However, only multi-partner projects and not the 22 % of single partner projects have been included in the statistics.

The balance in ANR success rates between men and women has improved from 2006 to 2007. Globally speaking, differences between male and female success rates do not appear to be statistically significant. Application behaviour, however, appears to be a problem, women being only about 75 % as likely to apply as men.

The ANR awards well-funded 'Chairs of excellence'. Disaggregated data on success rates was not provided (they enter into the 'non-thematic' category) but the lists of awardees are published. There were no women among the 5 senior and 10 junior awardees in 2005. In 2006, there was 1 woman out of 6 (17 %) senior awardees and 3 out of 8 (38 %) juniors. In 2007, none of the 3 seniors and 2 (14 %) of the 7 juniors were women. In 2008, there were 2 women out of 15 awardees (13 %) – the list does not distinguish the level.

No other data on success rates was available for other sources of funding or doctoral and post-doctoral grants. In 2007-08, 3,994 new doctoral grants were awarded, 58.6 % to men and 41.4 % to women.

In summary, the French funding system is not globally very transparent and gender equality in research funding is clearly not a priority. Fortunately, the new funding agency ANR has begun to publish some data (not in success rate format and restricted to multi-partner projects). No gendered information on amounts of funding is available.

Gendered data need to be a) collected and b) published by all funding organisations. The data provided by ANR showed gender balance in success rates varying according to disciplines but globally improving from 2006 to 2007. No strong imbalance was noted, but the probability of women applying is only 75 % of that for men.

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Germany
Thomas Hinz

The representation of German women at the highest academic positions is the lowest in the EU (She Figures 2006: grade A: 9.0 % in 2004) although females and males show equal representation in university degrees. In the research system the loss of women is seen as highly problematic because investments in human capital are wasted when women drop out at higher academic levels and because of the general obligation to ensure equal opportunities. Equal opportunity in academic research is a major policy topic since the beginning of the 1990s. Recently the 'Excellence Initiative' even strengthened the general policy orientation.

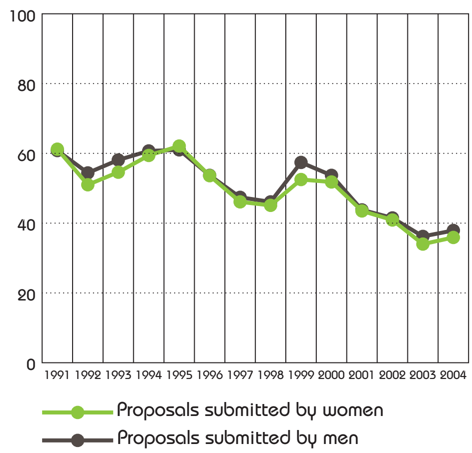
The most important research funding organisation is the Deutsche Forschungsgemeinschaft (DFG). The yearly budget is EUR 1.411 million (2006). The DFG is a public association, funded by the federal government (Bund) and the states (Länder). Equal opportunities for scientists are among the DFG's statutory objectives since 2002.

All qualified scientists (i.e. with PhD) can apply for project funding for any kind of research. In all research funding, the DFG is obliged to a peer review evaluation and to equal opportunity policies. The criteria for excellence are generally defined: creativity, innovativeness, feasibility. The peer review is anonymous. In the evaluation system of DFG there are two different levels. The proposals are first judged by reviewers who are chosen by DFG Head Office. On the second level, peer-elected members of Review Boards ('Fachkollegien') must ensure the quality of the decision. The Review Boards assess whether reviewers were appropriately chosen and whether the content of their statements is adequate, in order to prepare a funding decision (Koch 2006). A recently published study (Hinz/Findeisen/Auspurg 2008) looks at the involvement of women in the DFG's peer review system. Whereas the proportion of women amongst DFG peer reviewers had reached 9 % by 2004, the figure for the group of professors in the same year was 13.6 %. Evaluated on this basis, women are underrepresented amongst DFG peer reviewers. On the second level, the proportion of women as elected members of Review Board increased recently from 12 % to nearly 17 %. With the exception of the peer review system the proportion of female scientists on scientific boards of the DFG is above their representation among full professors.

The DFG publishes basic information on participation and success rates by gender and conducts regularly surveys among the people who receive funding. The study by Hinz et al. (2008) covers the topics of application and success rates as well as the representation of female scientists on scientific boards. The DFG has updated some numbers and figures of the report on its website for the year 2007.

The results of the study indicate an under-representation of women amongst applicants. The Figure below shows how the success rate for men and women varied over the period 1991-2004 ('Normalverfahren'). In the 14 years under consideration, the success rate was lower for women than for men, except for two years (1991 and 1995). The difference is generally minor, however. The Table on the next page gives success rates by scientific disciplines for 2004.

Germany – Trends in success rates of funding proposals under the Individual Grants Programme by gender (1991-2004 in percent)



Source: DFG, Hinz/Findeisen/Auspurg (2008)

Germany

Gender specific success rates (in %) for DFG Individual Grants, 2004, by scientific disciplines

	Female	Male	Difference
Natural Sciences	38.0	43.8	- 5.8
Engineering and Technology	29.6	31.4	- 1.8
Medicine (Life Sciences)	34.4	37.7	- 3.3
Agricultural Sciences	29.8	38.7	- 8.9
Social Sciences	34.5	38.7	- 4.2
Humanities	45.5	40.5	+ 5.0

Source: DFG, own calculations

In 2007, the differences in success rates are slightly larger. Overall, there is a five point difference at the expense of female scientists (males: 47.4%/females: 42.3%). However, the in-depth analysis of success rates does not reveal a systematic gender bias.

Due to female underrepresentation among the applicants, the DFG encourages younger female scientists to apply for research funding, especially because there is no evidence of discrimination by sex and because younger applicants have relatively better chances of grant approval. As a consequence of the study young female scientists should receive an adequate career coaching and at the same time female senior scientists should be better represented in coordinated programmes as project leaders and speakers etc. Important elements of monitoring systems are currently being established. However, there is still a lack of information on the relevance of research funding to the careers of female and male scientists.

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Greece

Rossella Palomba

In Greece, the scientific labour market, as in most European countries, remains male-dominated. In principle, Greece supports the European effort to encourage and empower female scientists to be more active in order to obtain a better professional career in the research area.

There are two main organisations of women scientists: The Greek Association of Women Engineers and the Research Centre for Gender Equality (KETHI). The Greek Association of Women Engineers encourages women's research careers, by aiming to promote an equal opportunity framework between men and women in education, work and life in general. The Research Centre for Gender Equality (KETHI) was founded in 1994 and is supervised and funded by the General Secretariat for Equality of the Ministry of the Interior, Public Administration and Decentralisation. The aims of KETHI's activities have a dual focus: to conduct social research on gender equality issues and to improve women's status and enable their advancement in all areas of the policies defined by the General Secretariat for Equality.

Very recently the Greek parliament voted a new law that establishes the quota of one third women in all national committees for research, research evaluation processes, etc. In the National Committee for Research and Technology (ESET) there are currently only 3 women out of a total 62 members.

The most important funding agency for research activity in the country is the government, which provides approximately 47 % (EUR 542.5 million in 2005) of national research funding (EUR 1 153.4 million in 2005). The main research performers are universities and their research institutes, with only marginal participation by the TEIs. The private sector and the public research centres supervised by the various ministries, the main one being the Ministry of Development, are also involved in some research activity.
Data on funding by discipline and gender are not readily available on the internet or in published documents. It was impossible to calculate gender success rates. The only available information comes from EKKE Database II, which was developed on the basis of the archives of GSRT. More particularly, the information included in Database II concerns the selection of research projects funded by the GSRT in the framework of EPET II (2nd Operational Programme for Research and Technology, 1994-1999). The data are fairly old but no other information is available. From that archive it emerges that almost 90 % of Principal Investigators were men.

The Greek system for research funding is not sensitive to gender at the level of political strategies and choices. Even if in the country there are centres devoted to the study of gender issues and equal opportunities, no attention is given to gender mainstreaming and gender balance in funding research projects. We can hope that the new composition of ESET (National Committee for Research and Technology) with 1/3 women will pay more attention to gender at least at the statistical level.

Hungary

Petr Pavlik

The Hungarian government adopted the Mid-term science, technology and innovation policy strategy (2007-2013) in 2007. Equal opportunities are mentioned as the last of the ten horizontal strategic aspects. The National Office for Research and Technology (NORT) elaborated the main strategic guidelines for tackling women's participation in research. In order to achieve these aims, an action plan was prepared and is under discussion by the government. NORT finances some actions related to raising public awareness on the topic and operates an ad-hoc working group. The Association of Hungarian Women in Science was established in September 2008.

The three-pronged institutional system of Hungarian national innovation consists of: governmental organizations, the Hungarian Academy of Sciences (HAS) and the research and technological institutions. The highest-level governmental forum is the Science and Technology Policy Council (STPC), which is assisted by the Science and Technology Policy, Competitiveness Advisory Board (4T). Innovation tasks are coordinated and implemented by the NORT, which is assisted by the Research and Technology Innovation Council (RTIC). All members of the councils are men.

Major basic-research funding institutions are: 1) the Hungarian Scientific and Research Fund (HSRF); 2) the NORT; 3) the HAS; and 4) the higher education sector. The most important one, the HSRF, has supported almost 15 000 projects (worth EUR 218 million) over the past twenty years. It awards five types of grants ranging from standard projects to grants for research based on international cooperation. Applications are evaluated using a peer review system. Based on reviews, proposals are subsequently ranked by review panels, which are divided by disciplines (Social Sciences and Humanities, Life Sciences, and Science and Engineering). The rankings are approved by corresponding boards and finally authorized by the HSRF Committee. Since 2004, the HSRF started to develop an international network of peer reviewers. Nothing suggests that gender is considered in the process.

The principle of anonymity is applied with strict rules regarding conflicts of interest, the process is transparent and reviews of proposals are available to applicants. Names of reviewers are publicly available, but they are anonymous with respect to individual grant applications. No appeal procedures are specified in the HSRF Rules.
The HSRF takes into account career breaks for child-raising in case of support of internationally known young researchers. However, the same does not apply to post-doctoral grants. It seems that gender sensitive provisions are applied where EU rules are relevant.
Strategic documents of the NORT do mention gender indicators and require gender equality plans. However, there is no mention of gender equality in the calls and the Guide for Applicants. According to the latest research, these tools do not have much impact during the evaluation process or during the execution of the projects.
The HAS has a gender policy and set up a working group for women researchers. During the nomination of Committee Members, if a male and a female candidate have the same points by criteria it is recommended that the female one is chosen. The first woman chief officer of the Hungarian Academy of Sciences was chosen at the beginning of 2008.

There are no data available about success rates by gender in Hungary and honey pot scores are not routinely calculated. According to the ENWISE report, honey pot scores are very low for Hungary (-10).

Overall, Hungary is at the beginning of the long road to achieve the gender equality standards desired by the EU, but due to the current action plan and thanks to the civil initiative, there are clear plans for improvement in the future.

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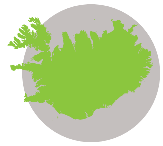
Iceland

Hans Kristján Guðmundsson



The Icelandic scientific community is internationally strong. In 2005 ([1]) the total R&D expenditure amounted to 2.8 % of GDP, placing Iceland among the top R&D investors in the world. The government financed 41 % of the total investment and 52 % came from the private sector. Around 3,800 researchers – 39.3 % being women – were active in Iceland (Pop. ca. 300,000). Of the researchers holding a doctorate 30 % were women ([2]). For the academic year 2007-2008 women were 28.6 % (148) of all university employees holding a doctorate, women professors being 21.6 % (56) of all professors ([3]).

All discrimination based on gender is prohibited by law. It is stipulated that gender proportions shall not be less than 40 % where there are more than three members in committees, boards and councils appointed by public authorities. A Committee for Women and Science is part of a governmental gender equality plan for 2004-2008.

The Science and Technology Policy Council, STPC, is the highest policy instance for public governance of research, development and innovation. The STPC is chaired by the Prime Minister (PM) with seats for up to seven other ministers and 16 ordinary members, active in the Science and the Technology Committees, appointed on three year terms. Presently (2008) two of the ministers involved and 37.5 % of the STPC ordinary members are women. The STPC has recommended that actions be taken to ensure equal opportunities for women in the competitive funding of research.

Public support for research is mainly directed through appropriations to universities and sectoral research institutes with only around 14% channelled through competitive funds. This competitive public funding system is operated by the Icelandic Centre for Research, RANNIS, which also monitors and analyses resource allocation and performance of R&D.

This study on excellence based success rates is limited to the Icelandic Research Fund, being the most important competitive fund for academic research in Iceland. The fund is governed by an independent Board of five members, appointed by the Minister of Education, Science and Culture on three year terms, and operates horizontally across all fields of science. The Board is chaired by the chairperson of the STPC Science Committee, presently a woman, and the committee lays down the funding strategy. At present 60 % of the Board members are women. The yearly budget allocations have increased in 2008 and further increase is envisaged. A peer review process is stipulated by law (Act 3/2003) with four evaluation panels of seven senior scientists each, appointed by the STPC Science Committee on two year terms. Two members of the Physics and Engineering panel are women and four or five women sit in each of the other panels. External experts are consulted in the process, to an increasing degree recruited internationally. The main criterion is the scientific excellence of the project, the project investigators and the institution(s) involved. The grants awarded are mainly project grants, given to research teams or individuals for up to three years. About one third of the budget is available each year for new grants. Gender related issues are not mentioned in the strategy or the rules for the Fund.

Gender success rates for awarding of grants (all types) for the year 2007 are available (see Table 21 of the main report). The applications by female Principal Investigator are close to one third of the total, which is comparable with the female proportion of the PhD holders. However, no data of the potential pool of applicants is available. Total success rates are higher for female Principal Investigators (PI). However the differences are small and not statistically significant. It is also observed that 70 % of grants to female PIs are within the fields of medical and social sciences and the humanities as compared to 44 % of grants to male PIs. Statistical interpretation must however be careful given the low number of grants.

It can be concluded that there is no significant gender bias in the Icelandic competitive grant awarding system and the gender representation in the policy and decision making bodies involved seems mostly to be in accordance with the legislation on gender equality. However, the availability of gender statistics is poor and no systematic monitoring is carried out.

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Ireland

Louise Ackers
Debbie Millard

Ireland is a high growth country in research and has recently invested increasing amounts and announced new initiatives to promote R&D. In 2007, 1.56 % of GNP was spent on research (Forfas 2007), with a target of 2.5 % of GNP by 2010. Rapid growth and the need to find skilled people have provided the impetus to promote gender equality in the workforce and attract women into employment (Allen 2001). Ireland has a fairly high number of female researchers in higher education relative to the EU.

The main organizations funding research are Science Foundation Ireland (SFI) and the Higher Education Authority (HEA). SFI invests in academic researchers and research teams most likely to generate new knowledge, leading edge technologies and competitive enterprises in the fields of science and engineering underpinning Biotechnology, Information and Communications Technology and Sustainable Energy and Energy-Efficient Technologies. The HEA provides block grants for infrastructure and administers the Programme for Research in Third Level Institutions (PRTLI). Other important funding agencies are: the Department of Education and Science, Teagasc (agriculture), Enterprise Ireland, the Health Research Board, the Industrial Development Agency, the Irish Research Council for Science, Engineering and Technology and the Irish Research Council for Humanities and the Social Sciences.

Grants are assessed according to international peer review or a combination of international and Irish reviewers. Some information on peer review processes and research awards is publicly available. The following presents data on application and success rates for some major funding programmes: the Science Foundation Ireland Research Frontiers Programme, Health Research Board and IRCHSS research grants.

Ireland

SFI Research Frontiers Programme (2007)

Numbers/% of Pre-proposals by Gender			Success rates by gender			
	Male	Female	Male		Female	
Field	Pre-proposals	Pre-proposals	Full proposal invites %	Awarded (% of pre-proposal)	Full proposal invites	Awarded (% of pre-proposal)
Biosciences	160 (70.8 %)	66 (29.2 %)	42.5	19.4	37.9	16.7
Chemistry	67 (87.0 %)	10 (13.0 %)	41.8	25.4	70.0	40.0
Computer Science	59 (89.4 %)	7 (10.6 %)	44.1	18.6	57.1	57.1
Ecology, Evolutionary, Organismal Biology and Environmental Science	25 (61.0 %)	16 (39.0 %)	52.0	32.0	31.25	6.25
Engineering	80 (87.9 %)	11 (12.1 %)	50.0	20.0	45.45	27.3
Geosciences	41 (93.2 %)	3 (6.8 %)	51.2	34.1	0.0	0.0
Materials	50 (86.2 %)	8 (13.8 %)	50.0	24.0	12.5	12.5
Mathematics	41 (87.2 %)	6 (12.8 %)	56.1	39.0	16.7	0.0
Physics	47 (87.0 %)	7 (13.0 %)	57.4	36.2	28.6	28.6
Calculated from SFI data(2008)	**570 (81.0 %)**	**134 (19.0 %)**	**47.5**	**24.9**	**37.3**	**19.4**

Women are around 20 % of SFI Frontiers Programme applicants, but higher in EEEOB and biosciences. The vast majority of applications by women are in the biosciences. Men are more successful than women (particularly at the full proposal stage). 2008 data showed a slight increase in the proportion of women applying (20.2 %) and success rate (21.7 %) (SFI 2008).

Women form 43 % of IRC Humanities and Social Sciences applicants. Time series data shows that this proportion is fairly typical of the past few years (with slight variations). Men were more successful than women in 2007-08. However, this is not necessarily always the case. From 2001-02 to 2008-08, the overall success rate for men was 27.9 % and for women 29.7 %, with considerable variation from year to year.

Ireland

IRCHSS (2007-08)

	Total	Male	Female
Research Grants Applications	132	75 (57 %)	57 (43 %)
Success Rates (%)	30.3 %	34.7 %	24.6 %

Ireland

HRB (2007)

	Total	Male	Female
Research Grants Applications	687	452 (65.8 %)	235 (34.2 %)
Success Rates (%)	16.4 %	15.5 %	18.3 %

Men form around two third of Heath Research Board applicants and women one third, which has been a consistent trend based on recent data. Women are slightly more successful than men. Data from the two previous years showed that overall success rates for men and women were very similar.
Women constitute around 40 % of researchers in higher education. In social sciences and humanities, the numbers of women (37.5 % and 42.9 %) correspond well to the numbers of research applications submitted by women to IRCHSS (43 %). However, in natural sciences, although the numbers of women were similar to those in social sciences and humanities (39.1 % in medical sciences and 37.5 % in natural sciences), fewer research proposals were submitted by women to the HRB and RFP. Similarly in engineering and technology, the proportion of female researchers is higher (37.5 %), than the proportion of applicants to the RFP. A detailed examination of data on the pool of applicants is needed to understand trends better.

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Israel

Suzanne de Cheveigné

Israel is a country which puts an unusually high proportion of its resources into research and development, particularly in the private sector but the proportion of women active in the area is low. In 2006 the national expenditure on civilian R&D was almost EUR 5000 million, approximately 4.5 % of the GDP, well above the Lisbon objective of 3 %. R&D is performed by the business sector for 76 %, 15 % by universities, 5 % by the government and 4 % by the private non-profit institutions. Israel has a particularly low proportion of female researchers in the Higher Education sector: 25 % when the EU25 average is 35 %. Among academic staff, 40 % of men and 15 % of women are grade A. The glass ceiling index is 2.0, close to EU25 average of 2.1.

Israel has carried out some gender equality actions in the research area. For instance, through the Israel Women's Network, gender advisors to the University presidents were appointed in the late 1980's (sometimes discontinued then reappointed). A National Council for the Promotion Women in Science and Technology was created in 2000. The Knesset (Parliament) declared 2002-2003 a year for advancing women in science and technology. The Ministry of Education has specific 'Advancement of women' fellowships.

The budget allocations of the government for civilian R&D in 2005 amount to about EUR 770 million of which 44 % (EUR 340 million) was allocated to the academic R&D system. This represents about 60 % of its expenditure for R&D. The Planning and Budgeting Committee (PBC) funds the researchers at the universities and provides specific funding for basic research, which is diffused through the Israel Science Foundation (ISF), as well as through 10 fellowship programmes. Other main funding sources are bi-national (with US or Germany).

ISF is Israel's predominant source of competitive grants funding for basic research. The roughly $60 million annual budget funds 1,300 grants a year, and provides 2/3 of all such funds. ISF awards grants in Exact Sciences and Technology, Life Sciences and Medicine and Humanities and Social Sciences to researchers at Israeli universities, other centres of higher education, research centres and medical centres. Its governing body counts three women among its 28 members (11 %).

ISF maintains about 60 expert committees of 3-12 members, recruited each year, each of whom follows up to 7 research proposals. International evaluators are selected by the Committee members, picked from various professional databases. A list of 8 experts per proposal is drawn up, with the aim of finally obtaining at least 3 evaluations per proposal. Little attention seems to be paid to gender balance among evaluators. The Committee discusses reviews and the opinion of the member in charge of each project and rates the proposals. These results are submitted to the Area chairman (the 3 areas are Exact Sciences and Technology, Life Sciences and Medicine and Humanities and Social Sciences) who adds comments and submits the proposal to the ISF Academic Board that in turn makes recommendations. The final decision is made by the ISF board. Actual grant amounts depend on reviewer assessments of both scientific excellence and need.

Applicants must be faculty members. There are age limits for some post-doctoral programmes.

No up-to-date gendered success rates were available from ISF, even on our request. Data for 2001 (Messer-Yaron, 2006) showed a major and statistically highly significant gender imbalance (success rates of 23 % for women and 36 % for men, undifferentiated by discipline – see also main report). According to She Figures 2006, the difference between men's and women's global success rates in Israel is among the highest in Europe (data for 2000, women 30 %, men 39 %).

Among other sources of postdoctoral funding, Weizmann Institute's programme has a career age limit (4 years after doctorate).

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Italy
Rossella Palomba

It is not without difficulty that issues related to equal opportunities between women and men have entered the Italian political agenda, and the spread of equality programmes and positive actions is still limited. Italy is characterized by the capacity to produce laws and actions promoting gender equal opportunities concerning the labour market, scientific sector included, but not to monitor their application. The scarcity of women inside the Parliament is an additional impediment to mainstream gender in policy actions and plans concerning science.

The Italian major funding sources for scientific research come from the Ministry of University and Research (MIUR) through several calls for proposals (mainly based on co-financing). PRIN (Research Projects of National Interest) are the main funding source for academic research projects (EUR 82 120 million in 2006). The aim is to concentrate the state funds on projects of key national interest. The applications submitted are evaluated by national evaluation panels appointed by the Ministry for each of the fourteen large disciplinary fields. Gender is not amongst the evaluation criteria.

For each panel there is a coordinator who has mainly an organizational role. In the first stage (which assigns up to 35 of the 60 rating scores available) evaluators can see only the abstract of the project. They are thus blind to the name of the proponents and to the detailed articulation of the projects. The second stage involves the evaluation of the full details of each project (including the CVs of the participants) and assigns up to 25 rating scores. At the end of the process, a rank of all proposals is agreed upon by the members of the panel and, on this basis, the allocation of the financial resources available for that panel is allocated to the best projects. The presence of women amongst evaluators is very limited (See figure 2, p.45). In 2006 it was concentrated within Agricultural Sciences, Humanities, Law, Biology and Engineering/informatics. All the other disciplines have no woman amongst the evaluators. In all the disciplinary groups, women – when present – were in the minority.

Publicly available data sources on the Ministry of University and Research website and in all the official documents do not include gender. Upon request, the Statistical Office of the Ministry for University and Research produced a specific elaboration by gender. The data were easily obtained but the gender transparency of the system remains poor.

From the analysis of data, it emerges that in the last available year female Principal Investigators obtained 13% of the total budget allocated to research projects. Women in all disciplines gained the lowest percentage of the budget: the minimum was in Architecture and Civil Engineering (2.4 % of the total budget); the maximum in Humanities (33.2 % of the total budget). In terms of average per-capita budget, in 2006 women have the lowest average in all the disciplinary areas with the exception of Land sciences, Engineering & Informatics, Humanities and Economics (See Table 18, p.62).

From the point of view of gender success rates, we found less successful rates for women than for men (see Table below).

Italy

Success rates by sex of the Principal Investigator and disciplines, 2006

Disciplinary areas	2006		
	Female	Male	Total
1. Mathematics	25.0	51.3	47.7
2. Physics	20.8	24.8	24.3
3. Chemistry	21.1	27.7	26.9
4. Land Sc.	18.2	30.8	29.2
5. Biology	13.8	24.7	20.8
6. Medicine	20.9	24.1	23.5
7. Agricultural sciences	18.0	26.6	25.0
8. Architecture	9.5	21.2	19.9
9. Engineering. informatics	18.5	16.3	16.4
10. Humanities. the Arts	23.8	28.6	26.9
11. Philosophy	34.3	37.5	36.8
12. Law	40.0	52.5	50.0
13. Economics	29.4	19.5	20.4
14. Social Sc.	30.0	43.1	39.4
Total	**20.8**	**26.2**	**25.2**

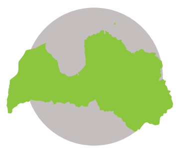
Source: personal elaboration on MIUR data

The Italian system for research funding shows a pervasive indifference to gender both at the level of policy directions and choices. One may conclude that gender is treated as an after-thought, something to be considered once macro criteria of quality and relevance of project proposals are achieved. Thus, there is a tendency to consider women as a social group, rather than gender as a cross-cutting issue.

Laws and rules are not at all discriminatory towards women but the fact that policies and evaluation guidelines are completely blind concerning gender obscures women's potentials and – to some extent – reinforces male lobbies.

Institutions must not ignore evidence that outlines the disparities within budget policies and practices, and should maintain consistent institutional audits to address and compensate for unequal treatment. Informed, more gender sensitive means of distributing resources are necessary to provide adequate foundations and fair competition for women.

Latvia
Maija Bundule



During the transitional period (1990-2004), a complex socio-economic transformation, including transformation of the higher education and R&D sectors has occurred in Latvia. The transformation of R&D meant a fundamental change in its components, i.e. legislation, policy, management bodies, organisational structure, institutional framing, etc. As a result the number of scientific staff decreased considerably. Compared to women, the presence of men in science decreased. As a result gender segregation up to now is not really visible in the research sector. The priority of science policy in Latvia is to solve problems related to raising the overall capacity of the research system and in particular the lack of human resources in research, aging of the research and academic staff, provision with modern research infrastructure as well as inadequate funding. There have been no special measures adopted to promote the role of women in science.

Latvian R&D policy funding is coordinated mainly by two ministries - Ministry of Education and Science and Ministry of Economy. Since 1991 research and technology development funding is distributed on a competitive basis mainly by grants and projects. The structure of the funding system changed in 2005 when institutional funding and state research programs were introduced. A significant part (~38 %) of the state budget is allocated directly to research institutions. This new funding source aims at covering the maintenance costs for research institution, costs for public services, basic salaries for researchers as well as salaries for research support staff and is allocated taking into account the outputs (measured by the number of scientific publications, projects, patents etc.) of the research institution in the previous year.

Project based funding comprises 60 % of total state budget allocations for R&D and most of it is allocated via the Latvian Council of Science (LCS). The LCS is a collegial body of researchers elected for three years. The members are representatives from the Ministry of Education and Science, Latvian Academy of Science, Latvian Council of Rectors and Expert Commissions. LCS is assisted by five Expert Commissions, which review and evaluate research project proposals. The gender representation among the members of LCS is a striking testimony to the difficulties for women to participate in the shaping of science and research policy in Latvia. In 2007 the LSC consisted of 12 members, among them 10 male and 2 female members. Since the beginning of the creation of LCS in 1991, the chairman and vice-chairman have been men and only 2 women have been members of LSC. At the same time only women work in the Secretariat of the LCS. The existing legislation does not define any quotas for the nomination of women as members of the Latvian Science Council.

All project applications submitted to the LSC are evaluated by at least three independent experts (it depends on the amount of the funding requested). Experts are anonymous to the project applicant. The Expert Commissions summarize the evaluations of the experts, compile a ranking list of project applications and submit it to the LSC for a decision. The LSC makes a resolution to finance/refuse a project on the basis of the ranking lists and recommendations prepared by the Expert Commissions. Currently the LSC has five Expert Commissions. In two Expert Commissions (Expert Commission for Natural Sciences and Mathematics and Expert Commission for Engineering and Computer Sciences) there is not a single woman among its members. As for the Expert Commission for Biology and Medicine – out of 10 members, only two are women. The two other Expert Commissions, one for Agriculture and the other for Social Sciences and Humanities, consist of 4 women and 6 men each. The latter Commission is the only one which is chaired by a woman.

The project evaluation procedures, as well as administrative and qualitative criteria, are set by Governmental Regulations. There are no specific age limits, requirements concerning the position of the project proposer, or citizenship of applicant. The applicant should hold a doctoral degree and must have published publications, monographs or be a patentee.

The statistical data show that there are scientific branches that are clearly female and male. A large predominance of women is seen in humanities and arts, especially in philology and pedagogy, and this disproportion tends to remain stable. Natural sciences and mathematics, especially computing and engineering sciences are predominantly masculine.

Sociological research, performed in 2006 by a team from the University of Latvia, has identified the problems concerning the role of women in science. The main factors obstructing the career of women scientists, according to this research, are:

- Stereotypes about male and female professions that are not favourable to women scientists;
- combining career and family life. The stereotypes about the traditional gender roles in the family are defined by society and women scientists themselves. Most often women researchers are not able to fulfil these roles completely;
- returning to science work after maternity leave.

Nevertheless gender inequality is not perceived as a serious problem in the research system in Latvia.

Reference

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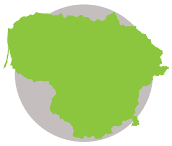
Lithuania
Maija Bundule



Lithuania was the first Central and Eastern European country to establish a Law on Equal Opportunities (1999). Academic feminism and women's NGO activity is well-developed. Five Gender Studies Centres have been founded and four of them are established in Lithuania's universities. In June 2008 the Ministry of Education and Science adopted a Strategy for the Implementation of Equal Opportunities for men and women in the RTD system. For 2008-2013 it is planned to develop gender mainstreaming tools, such as amendments of law, changes in the financing system, additional financing tools for women scientists, recommendations for research and higher education institutions to implement gender mainstreaming tools, etc.

Lithuanian R&D policy funding is rather centralised and coordinated between the Ministry of Education and Science and Ministry of Economy. The Lithuanian R&D funding system features a huge share of public funding and moderate business R&D investments. The bulk of public spending for R&D goes directly to public R&D institutions (total public funding accounts for 0.6 % of GDP with 0.4 % as direct institutional funding). Institutional funding remains the key tool in Lithuanian R&D policy and is mainly aimed at maintaining existing structures and salaries of scientific staff.

In 2009 it is planned to implement national research programmes based on competitive funding. The grant schemes targeted for centres of excellence, projects initiated by teams of high-level researchers, post-docs, PhD students as well as Master course students, reintegration grants for Lithuanian researchers working abroad and grants for attraction of researchers to business sector are planned to be introduced in parallel.

Competitive R&D funding makes up 15 % of total state budget allocations for R&D and is allocated via Lithuanian State Science and Study Foundation LSSSF (i.e. institutional projects performed according to national priorities, high technology development programme implementation related projects, projects of independent research groups and researchers, R&D projects commissioned by enterprises).

Nearly all university research is financed by the state budget with resources allocated to universities in lump sums. Universities further allocate these funds to departments largely based on established norms (based on the number of students and previous allocations). Increasing numbers of students, and enlargement of education functions within universities, restricts availability of funds and resources for R&D, as the function of R&D and education is not strictly separated in financial terms.

The share of the funding earned though contracts (mainly grants) is approximately 8 % of the total R&D budget of such institutions. Change in the funding principles during recent years has been towards more performance based funding, whereby the lump sum to the institution is allocated according to its outputs (measured by the number of scientific articles, presentations in international conferences, number of patents etc.) and level (number of contracts and amounts of external funds) of contract research for industry as well as public project grants. However, while this scheme sets performance incentives, it still does not allow influencing the direction of performed research in a broader sense.

As for competitive grants, all project applications that are submitted by individual researchers or research groups to the LSSSF are subject to a three-stage evaluation process. First, the project is evaluated by at least two referees appointed by the Expert Committee. Second, referees' opinions are presented in the Expert Committee where they are discussed and evaluated. Third, the project is presented to the Board which makes the final decision.

The main criteria for the evaluation of the project proposals are scientific quality and practical value of the project, novelty, topicality of the idea. The qualification of the scientist is also assessed: managerial experience of the leader, experience and competences of the research group members and partners. Attention is also paid to the planned work schedule and the soundness of the cost estimate. Age, citizenship or rank limits are not in the evaluation criteria. Foreign citizens can only apply for funding if they work in Lithuanian research institutions. The rule is that a scientist can lead only one team applying for funding, but s/he can also be a team-member in one more project. The LSSSF does not apply any specific measures to promote women in funding requests.

Referees' recruitment is organised on a voluntary basis: scientists fill in the referee application form online thereby subscribing to the common referee database (the same applies to foreign referees). In order to ensure international evaluations, the Foundation collaborates with scientists of Lithuanian origin from all over the world. Gender is not taken into account in the recruitment process and gender balance is not monitored.

Foreign experts are involved in the evaluation process of those project applications where the spending for scientists' salaries amounts to more than 200 000 LTL. as well as when there are no qualified scientists in Lithuania able to evaluate a particular project, or in order to avoid a conflict of interest.

During the transitional period in the Lithuanian economy (1990-2003), from a planned to a market economy, a considerable number of male scholars left their previous academic jobs and research positions, choosing a better-paid career in the private sector, abroad or in the political/diplomatic world. Compared to women, the presence of men in science has decreased considerably. Currently women make up almost half (47 %) of all researchers.

The Board of the Science Council of Lithuania (SCL) – the most important high level policy advisory body on R&D and Innovation policy – consists of 9 members amongst whom there are 4 women. Similar is the situation in the SCL Committee for Humanities and Social Sciences where there are 4 women amongst its 11 members. The situation in another SCL Committee is worse – in Natural and Technical Sciences, where there is currently only one woman amongst its 11 members.

The situation in the LSSSF with 7 men and 2 women on its Board (appointed for 3 years by the national government) is similar. Most of its Expert Committees and Boards are chaired by men (with only one exception). Women's representation in these committees is different and varies from total absence or single representative (for physical sciences; nanotechnologies; technologies and projects with business entities) to 3 or even 4 women representatives out of 7 or 9 committee members (for social sciences and preservation of national identity and globalisation).

Reference

- Lithuanian State Science and Studies Foundation, www.vmsfondas.lt

Luxembourg

Christian Suter

Despite equal opportunity legislation and several gender-specific measures and programs implemented within the higher education and research system, gender issues are not yet very high on the political agenda in Luxembourg. Women's representation in science is rather low (except as students, where the male-female ratio is quite balanced). Thus only 11 % of all full professorships at the University of Luxembourg are currently held by women (April 2008).

The major funding institution in Luxembourg is the National Research Fund (FNR – Fond National de la Recherche) set up in 1999. The current annual budget of the FNR is about EUR 15 million (2006). So far the FNR has developed and implemented multiannual research programmes (with calls for proposals within the framework of each programme) and so-called accompanying measures (conference participation, support with regard to mobility and training, the organisation of conferences, etc.). After 2008, the national PhD and post-doc grant schemes, which had been managed by the Ministry of Research, will be transferred to the FNR. The beneficiaries of the FNR grants are researchers at the University of Luxembourg (established in 2003) and public research centres.

The main decision-making bodies of the FNR are the Board of Administration, and the Scientific Council. The Board of Administration consists of a member nominated by each of the Ministers concerned (i.e. from the areas of scientific research, higher education, industrial research and development, technology transfer, budget etc.), two members nominated by the Government Council, and six members from figures recognised for their competence in the private sector of R&D. Currently one of the twelve members of the Board of Administration is female. The Scientific Council assists the Board of Administration as a consultative body on scientific matters. It consists of one representative from each of the three public research centres, a representative of the Centre d'Etudes de Populations, de Pauvreté et de Politiques Socio-Economiques (CEPS/INSTEAD), two representatives of the University of Luxembourg, as well as external experts. Currently two of the 14 members of the Scientific Council are female.

Once a call is launched, the Scientific Council of the FNR appoints an expert, known as the 'rapporteur', whose task is to coordinate the evaluation of projects and to present the results to the Scientific Council. The rapporteur appoints three or four independent experts for each research project. The Board of Administration and the Scientific Council have the right to appoint additional experts where necessary. Project proposals are evaluated by the experts according to commonly applied excellence criteria (e.g. scientific quality, originality, feasibility, socio-economic value, and consistency with the objectives and priorities set out in the respective research programme). Evaluation criteria are published. If available, evaluation guidelines are also published together with the call documents. The applicants do not receive the names of the evaluators, but evaluators receive the names of the applicants. Following the experts' evaluation, the rapporteur submits a list of project proposals to the Scientific Council, so that a selection can be made. In all recent calls, the FNR constituted an expert panel to evaluate the proposals. The final decision is taken by the Board of Administration following scientific advice from the Scientific Council. Applicants are informed about the results of the evaluation, together with the full, anonymous evaluations of the remote experts. If the applicant does not agree with the funding decision, he/she has the right to appeal. This is dealt with by the Board of Administration. However, no formal recourse procedure exists so far.

The FNR has an internal expert database that constitutes a pool of evaluators. For project evaluation and participation in panels, the FNR always uses international evaluators. Although the programme managers at FNR are sensitive to gender issues, no official recruitment or monitoring procedure exists at FNR level to ensure more balanced gender representation in the evaluation processes. The FNR is in the process of formalising its internal procedures, including the recruitment of evaluators, so that, in the future, gender may be part of the recruitment criteria for experts. In the process of setting up the new expert panel for the PhD and post-doc grant programmes, it is the FNR's declared aim to reach female representation of at least 40 % on the panel.

So far the FNR has not yet established gender-equality planning and monitoring. Reporting and statistical monitoring beyond the mere numerical level (number of proposals and budgets) has not yet been systematically developed. According to the FNR secretariat, a new IT system is being developed and will be operational by mid-2009, when the PhD and post-doc grant scheme will be integrated into the FNR. This application will include a statistical reporting tool which will be able to provide gender statistics systematically for all FNR activities.

Data on success rates by gender are not yet systematically collected and monitored by the National Research Fund. The FNR programme management kindly provided detailed gender-related data on the 16 calls that were made between 2001 and 2007. As indicated by the summary table above, overall success rates are identical for women and men. The number of female principal applicants, however, is extremely low (14 %).

Luxembourg

Success rates of the FNR multiannual programme calls 2001–2007

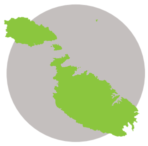
Number of applications			Number of grants			Success rates		
Men	Women	Total	Men	Women	Total	Men	Women	Total
145	21	166	84	12	96	57.9%	57.1%	57.8%

Source: data has been kindly provided by Ulrike Kohl from the National Research Fund.

Systematic gender-equality monitoring and (publicly available) gender-related statistics are lacking in Luxembourg. This may be explained to some extent by the very young age of both the FNR and the University of Luxembourg, but also by the rather low gender awareness in Luxembourg's society. A real challenge is the very low female representation at the highest levels in decision-making bodies (e.g. the FNR) and scientific careers (e.g. full professorships). Furthermore, the low number of female principal investigators participating in FNR calls should be increased. It looks as if the most recent FNR call under the new CORE programme in 2008 shows somewhat higher female participation – possibly an effect of the substantial rise in female assistant professorships between 2004 and 2008.

Malta

Louise Ackers
Debbie Millard



Malta joined the EU in 2004, and has only since begun introducing funding programmes. Malta is attempting to catch up with other EU member states from a low base in R&D and has very recently implemented various policies. Government spending on R&D has been estimated to be 0.2 % of GDP and business expenditure on R&D (BERD) is estimated to reach 0.4 % of GDP in 2006. Since the 3 % benchmark is considered unachievable for a country of Malta's size with a limited R&D sector, the National Reform Plan aims to increase spending to 0.75 % of GDP by 2010. Government R&D is carried out mainly by the University of Malta and a number of public institutes. According to the Maltese Report of the Helsinki Group on Women and Science the country does not have a tradition of a strong gender equality policy. The Constitution was only amended in 1993 to remove discrimination. According to Sciriha (2001), 'the status of women in Malta has advanced considerably in the last twenty years or so but much still needs to be done before women in Malta assume a prominent role in decision-making positions'. Women are poorly represented in research in Malta.

The Malta Council for Science and Technology is the only organisation providing research grants in Malta. Ministries have only recently had dedicated research budgets. In line with the National Strategic R&I Plan, every minister is now expected to establish an R&I cost centre. For the first time in 2004, the government made available EUR 0.72 million for the National RTDI Programme, designed to provide financial support, through competitive grants, for scientific research in open-ended topics.

Projects are funded based on a call for proposals and external peer review. The Programme Management Committee identifies relevant overseas research councils. The expert peer review is carried out by the external reviewers nominated by these research councils, with at least three external reviewers evaluating each proposal. On the basis of the evaluation reports submitted by the overseas reviewers, an external evaluation team identifies the projects to be funded according to the individual merits. The final decision on which projects are to be selected to participate in the National RTDI Programme remains that of the Programme Management Committee. The reviews are kept anonymous, but the lists of research bodies which nominate the reviewers are published to ensure fairness and transparency (MCST 2008).

Upgrading the R&I statistics framework is one of the major challenges for research policy. This was one of the recommendations in the European Commission's assessment of Malta's progress in implementing the National Reform Programme. Research grants have only just been introduced. Those statistics on gender that do exist were easily available by contacting the MCST.

Malta

Women and Research Funding

MCST National R&I Programme	2006
Projects submitted	58
Projects submitted by women	8
Projects funded	7
Projects lead by women	0
Female researchers involved in projects	4

Source: MCST 2008

13.8 % of projects were submitted by women in 2006, of which none were funded. Data from other years show some variation. In 2004, a higher proportion (23.6 %) of projects were submitted by women, which seems to correspond quite well with the number of female researchers in higher education (see below) and 3 were led by women. However, the proportion of women has declined since (Interim 2008 data showed no projects submitted by women).

In Malta there were 155 women and 484 men researchers in higher education in 2003 – 24.2 % female. In the government sector the picture was similar, with only 22 % female researchers, the lowest proportion in the EU in both cases. By field of science in 2003, the highest proportions of women researchers were in social sciences (42.3 %), followed by Medical Sciences (37.4 %), Humanities (28.3 %), Natural Sciences (15.8 %) and Engineering and Technology (10.1 %). The numbers in Natural Sciences and Engineering and Technology are very low by EU standards. In the EU-25, 29.1 % of HE researchers in Natural Sciences were female compared with only 15.8 % in Malta and in Engineering and Technology the proportion in the EU-25 was 21.3 % compared with only 10.1 % in Malta. The numbers in humanities were also quite low at 28.3 % in Malta compared with 38.3 % in the EU-25. Only in Medical Sciences (EU- 39.9 %) and Social Sciences (EU-39.3 %) are the proportions similar to other EU countries.

The Maltese research sector is very small and funding programmes have only recently been introduced, therefore caution is needed in interpreting limited data. Data on funding programmes is readily available on the web and statistics on gender that do exist were easily available by contacting the MCST. Women are currently poorly represented in research, and in particular in science and technology in Malta, and numbers of women applicants for and recipients of research funding are very low.

References

- Malta Council for Science and Technology (MCST) 'National RTDI Programme 2004: Guide to the National RTDI Programme', http://www.mcst.org.mt
- Sciriha, I. (2001) 'Women and Science: Review of the situation in Malta', Helsinki Group on Women and Science, May.

The Netherlands

Maaike Romijn

The Netherlands is a small country and not among the top countries in terms of research spending, but science is regarded as important by the government. Talented researchers are needed and the participation of women in science has been given priority over the past ten years. Despite a relatively firm policy, women remain strongly underrepresented in Dutch science (around 10 % female professors).

The most important research funding organization is the Netherlands Organization for Scientific Research (NWO), with a total budget of EUR 504.6 million in 2006 and increasing. A large part of this budget is provided by the Ministry of Education, Culture and Science. NWO and the Ministry promote scientific research at Dutch universities and institutes through nearly 120 different research programmes and grants including several programmes specifically aimed at more women in science in different career stages (Aspasia, Athena, Meervoud, FOM/v).

All NWO applications are assessed according to a peer review evaluation process. Excellence is the main criterion, as regards the individual researcher (track record) and research project (creativity, innovativeness, feasibility etc.). An advisory committee with Dutch scientists assesses the applications. These scientists are often professors, but depending on the programme, can also be associate or assistant professors. Input for the assessment is, in general, the application, anonymous referees, a rebuttal of the applicant to the referees and an interview. The referees are identified by the NWO supporting Division, not by the committee members or applicant. The rebuttal is a unique feature in Europe: applicants can respond to the referees - in writing - which is taken into account by the committee members. The assessment committee prioritises all applications and the final decision is made by the NWO General Board or Division Board. If an applicant does not agree with this decision, s/he can lodge an appeal. The appeal is reviewed by an external committee, which advises the General Board of NWO. NWO regards the appeals procedure as an efficient method to correct misjudgements or reconsider fundamental procedural matters. NWO considers the number of appeals lodged and particularly the number of valid appeals as an indicator of the transparency of the NWO procedures and their acceptation. Objections and appeals are monitored in the annual reports.

To be able to guarantee as much objectivity as possible NWO introduced a code of conduct in 2006. Everyone related to the selection processes, i.e. board members, committee members and referees, are bound to this code of conduct. In 2008 NWO introduced an internal guide for all board members, policy managers and committee members to create and monitor gender awareness and make all selection procedures as gender-proof as possible.

At NWO data on success in funding by gender is publicly available in the NWO annual reports and on the website, but is only based on gender of the principal investigator. These data are provided per grant type.

As to the disciplinary areas, success rates are available in thematic programmes or per NWO Division, which represents a disciplinary area.

Although women are not always equally represented in committees and boards, women are doing well in the NWO selection procedures- if they apply. Due to an agreement with the Ministry of Education, Culture and Science, for the Innovation Research Incentives Scheme (the largest talent scheme of NWO: EUR 150 million in 2009) NWO guarantees that the average success rate for female candidates will be at least equal to the success rate for male candidates. In addition, the Ministry makes an extra EUR 2 million annually available to NWO, specifically for female candidates in the Innovation Research Incentives Scheme. From 2002-2007 women were successful in this Scheme, but there are differences in these percentages between the years and disciplines.

Netherlands

NWO Innovation Research Incentives Scheme 2002-2007
TOTAL Veni/ Vidi/ Vici (including additional budget)

	Male PI	Female PI
Number of applications	4470.5	2055.5
Number funded	921.5	473.5
Success rate	20.6%	23.0%

(NWO, Romijn, October 2008)
PI = Principal Investigator

Women are successful in obtaining funding at NWO, but that does not necessarily mean that NWO reaches the full potential. The pool of applicants is difficult to define. In the Vici grant in the Innovation Research Incentives Scheme overall, from 2002-2007, women were more successful than men.

Netherlands

NWO Vici 2002-2007
(Innovation Research Incentives Scheme)

	Male PI	Female PI
Number of applications	807.5	183.5
Number funded	133.5	35.5
Success rate	16.5%	19.3%

(NWO, Romijn, October 2008)

Women represent 18.5 % of the Vici applications. The Vici grant is aimed at researchers of professorial quality. With 10.3 % female professors and 16 % female associate professors, Vici can be said to reach its full potential, but also assistant professors apply for Vici and are awarded. So 18.5 % is probably not the full potential, but still it is difficult to define on the basis of these career stages without being able to take into account career gaps or a glass ceiling.

Comparing other countries and research councils, the Dutch funding system is transparent and women are successful in obtaining funding. There are even specific programmes aimed at increasing the participation of women in different career stages and disciplines. Despite this, women remain underrepresented as associate professors and professors. Women seem to have an equal chance of obtaining funding, but do they have the same equal chance at becoming a professor? Without a transparent and pro-active HRM policy at Dutch universities, equal representation of women might still be a long way ahead.

Norway

Susanne Lehmann Sundnes, Carl Jacobsson

Gender equality is high on the political agenda in Norway. The Equal Opportunity Act enforced by the Gender Equality Ombudsman has two main intentions: to promote gender equality by ensuring the same opportunities are available to both women and men, and to improve the position of women through positive/preferential treatment. All state enterprises must have 40 % women representation on their governing boards. This of course includes universities, university colleges and research institutes.

The University Act permits the advertisement of academic positions in such a way as to target the underrepresented sex. In addition, it requires that both sexes be represented on selection boards. The Minister for Higher Education and Research has recently announced a coming proposal for temporary junior research positions reserved for women in scientific fields where there are few women.

The total R&D expenditure in Norway was EUR 3 700 million in 2005 or 1.5 % of GDP (cf. the population of Norway is 4.7 million). The Industrial sector had 46 % of the total R&D expenditure, while the Higher Education sector and the Institute sector had 31 % and 23 %, respectively. The R&D funding came from industry (EUR 1700 million), from public sources (EUR 1600 million), from other domestic sources (EUR 140 million) and from abroad (EUR 300 million; about 1/4 from the EU) in 2005.

The Research Council of Norway is by far the largest funding body. Allocations from the Research Council of Norway had a 27 % share (EUR 420 million) of the R&D funded from public sources in 2005. At the Council, women's representation on boards is at least 40 %. In general, this is also the case for peer review groups, except in the natural sciences and engineering where there are often fewer women. The Research Council of Norway is responsible for gender equality in research at a national level. The Council is also responsible for women's studies and gender research.

In 2004 the Ministry of Research and Higher Education set up an independent committee to support and provide recommendations on measures for gender equality within universities, colleges and research institutes. The committee contributes to awareness-raising around issues connected to the skewed gender balance in research.

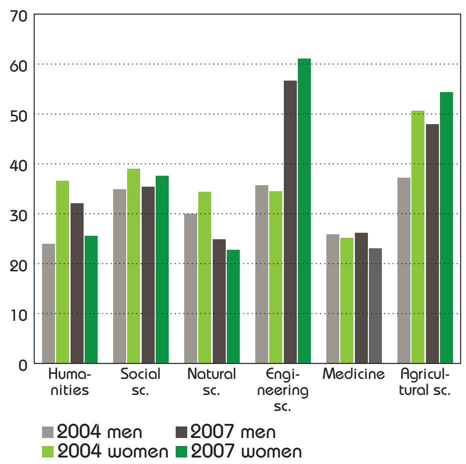
The total share of women among researchers in Norway in 2005 was 32 %. In the Higher Education sector the share of women among researchers was 39 %, in the Institute sector it was 34 % and in the Industrial sector 19 %. The proportion of women varies with the level of position and field of science. Among full professors in the Higher Education sector, 17 % were women in 2005, and 18 % in 2007. Among the associate professors 31 % were women in 2005 and 35 % in 2007. The share of women among lecturers was 57 % in 2005 and 58 % in 2007. The same year the share of women among research fellows was 51 %. Among the post doctors, the share of women dropped from 50 % in 2003 to 43 % in 2005 and 2007.

The total expenditures on R&D in the Norwegian Higher Education sector amounted to EUR 1300 million in 2007. R&D activities in this sector are largely funded by public sources. The general university funds have not increased as much as the external funding the last decade, but in 2007 these still constitute 65 % of the total funding in the sector. 17 % of the funding comes from the Research Council of Norway, which dominates the external funding. Other external funding sources include industry, 4 %, funding from abroad, 2 %, and funding from ministries (not general university funds), 8 %.

In 2004 The Research Council of Norway received about 4700 applications for research grants; 22 % of the applications came from women. For almost all fields of science women had a higher success rate than men. In 2007 the total number of applications was 5200, of which 28 % came from women. The Figure on the next page illustrates the gender differences in success rates by fields of science in 2004 and 2007. In total, women had a 3 per cent point higher success rate than men in 2004 and men had a 3 per cent point higher success rate than women in 2007.

Norway

Success rates for men and women – project grants from the Research Council 2004 and 2007 by field of science



Source: RCN/NIFU STEP

References:

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- Statistics Norway, www.ssb.no
- Research Council of Norway, www.forskningsradet.no
- Women in Science – promoting gender equality, http://kvinneriforskning.no/english/

Poland

Renata Siemieńska

Poland does not have (with some exceptions) special gender sensitive policy in the R&D sector.

Women's access to funds depends on: the number of women active in the sector of higher education and research, the number of submitted applications by women (in proportion to men's applications) and selections of projects accepted for financing.

Women are less frequently present on the higher level of academic hierarchy although their number is systematically growing and the number of female professors (the highest positions) is one of the largest in the European Union. As a result of political and economic changes in Poland there was a systematic growth of the proportion of women among those who have been getting doctor's degrees or a degree of habilitated doctor (HD). Also the number of women who were awarded the title of professor rose from 22.4 % in 1991 to 27.0 % in 2005. In 2005 women constituted almost half of the academics employed within research and developmental activity (42.7 %) including 19.6 % of the total number of academics with professorship.

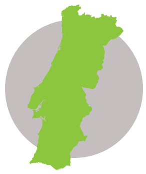
The main research funding agency is the Committee of Scientific Research created in 1991. It was a state agency. A few years ago the committee was incorporated into the Ministry of Science and Higher Education. There is a Steering Committee 'Women in Science' to monitor women's positions in academia. There are three categories of grants for which scientists may apply: (1) 'own' projects to conduct a study by the scientist alone or by scientist and his/her team, (2) 'supervisory' projects when the scientist plays a supervisory role for a younger person completing a Ph.D. and the fund is used to conduct the study by the younger person, (3) 'habilitation' projects to get financial support for a scientist working on their own habilitation dissertation. (A habilitation degree is the highest scientific degree which can be received by a person who has already completed a Ph.D.).

Comparing data for the period 2005 – 2007, women's projects accepted for financing constituted about one third of the total. Over time there is an insignificant trend of an increasing number of women's projects among those which are accepted for financing.

The above mentioned stability of the structure of allocated funds does not reflect the increase in the number of women engaged in scientific activity and work in higher education institutions. However, the increase in the number of faculty members is related to the very high growth in the number of the non-public higher education institutions since 1990, in which employees are not at all or very rarely are active in research. The non-public higher education institutions are almost exclusively teaching institutions.
Women constituted a lower percentage of receivers of 'supervisory grants' than 'own grants'. This is a consequence of the fact that women rarely occupied higher positions in the structure of the higher education institutions which did not allow them to be supervisors of doctoral dissertations.
Women as principal researchers ('own' projects) were getting smaller grants (measured by average amounts of money) than men in all groups of disciplines.
The success rate is higher among men than women with some exceptions. Women are more successful in applying for all types of grants in fields classified as 'Engineering and Technology' and in the case of habilitation projects in natural sciences, social sciences and humanities.
The boards awarding grants in the ministry in the years 2005-2008 are composed almost exclusively of men.
Women were rarely among the beneficiaries of a special programme to support young scientists (up to 35 years old) by the Foundation for Polish Science (Fundacja na rzecz Nauki Polskiej). However, in the period 1993-2008, the number of women increased from 17.4 % in 1993 to 44.9 % in 2008 in the total number of young scientists awarded stipends. Women have been receiving stipends mainly in humanities, social and behavioural sciences and in second place - in natural sciences. The foundation has some programmes (e.g. START, COLUMB) where gender is taken into account (women who have children can be older than other applicants, or they have more time after the PhD to apply for a grant).

In conclusion, women's situation as grant and stipend receivers is slowly changing. Recently they are more often present among beneficiaries. It is necessary to remember that there is no institution using quotas for female grant receivers or the criterion of gender to equalize or to favour women. The gender criterion is not taken into account in the process of decision-making on fund allocation. The proportion of men and women among beneficiaries is not monitored. There is a lack of statistics concerning the issue in different disciplines.
At the same time there are some attempts to encourage women to study technology and engineering, addressed to girls graduating from high schools or generally addressed to women to become engineers by different companies or by the media (private sector or NGOs).

Portugal
Maria Izquierdo



Portugal is a country where research expenditure is relatively low. While in EU27 R&D it represented 1.74 percent of GDP in 2005, the effort of this country was 0.8 per cent. On the other hand, the government plays the main role in research, occupying the second position in the EU ranking (OECD In figures, 2007). The sector of higher education is the one that concentrates most entities executing R&D, occupying over 44 % of personnel.
The general picture of the participation of women in research activities shows that in any of the scientific domains, the proportion of female researchers is higher than the EU average, and growth rates of women researchers are remarkably higher than average. Women are overrepresented with the exception of engineering and technology. Their distribution by sector shows that women are clearly under-represented in the private sector (27 %), while they are the majority among government research personnel (52 %) and almost a majority in higher education (46 %). These proportions are remarkably high when compared to the rest of the EU (OCES, 2003). More recently, a survey shows that women have increased their participation in the government sector to 57% and in higher education to 49 %. (GEPEARI, 2007)

The body responsible for the definition, execution and evaluation of science and technology policies is Ministério da Ciência e do Ensino Superior (MCES). The main institutions related to research and organically linked to MCES, are the Fundação para a Ciência e a Tecnologia (FCT) responsible for assessment of research units, research projects, and pre-doctoral and post-doctoral grants; the Instituto de Cooperação Científica e Tecnológica Internacional (ICCTI) responsible for co-ordination of international cooperation in science and technology; and the Observatório da Ciência e do Ensino Superior (OCES).

Regarding R&D projects, assessment is made by international panels of independent evaluators. The panels, divided by scientific domain, are composed of three to five members who are chosen by coordinators. FCT invites coordinators from amongst the most internationally renowned experts in each field; the result is that women's participation in panels is remarkably low since they form only 16 % of the membership of panels.
The evaluation of projects is made by on average two experts, and the main assessment criteria are:

1) Scientific merit and originality, methodology and expected results,
2) Scientific merits of research groups, and qualifications to execute the projects, and
3) Planning of activities.

Other criteria taken into consideration are: the results attained in research projects previously financed, scientific production internationally referenced, no overlap of projects with others in which members of the team participate, and participation of young researchers. There is no mention of the composition by sex of the research groups.

The results of the assessment processes do not indicate the existence of discrimination against women. As a matter of fact results are exceptional in the domain of natural sciences and quite similar to the rate of men in the other fields.

The situation of women in relation to postgraduate grants should also be taken into consideration. It must be noted that women are the majority in the three categories of grants: 65.4 per cent among master grant holders, 56.9 per cent among doctorate holders and 53.7 per cent among post doctorate holders. Therefore data show a favourable panorama in the near future. In addition, the general increase of PhDs, particularly strong among women, reinforces that tendency.
Nevertheless, there are indications that they may not occupy the higher categories, given the fact that they are a minority among principal investigators in all fields of knowledge, and particularly in evaluation panels. Therefore, the concern is not so much about women's participation in research, but about access of women to higher positions and to decision making positions.
With respect to assessment, data show no evidence of a gender bias in their contents nor in their application, since the success rates are higher for women. The main weaknesses of the system are probably: the composition of assessment panels, the apparent under-representation of women among principal investigators, and the relative segregation by sex depending on field of knowledge. It would also be useful to improve the accessibility to statistics on research funding, and desirable that it reaches the level of publicity applied to information on postgraduate grants.

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Romania
Clementina Timus

A full EU member since January 2007, Romania has had a long transition period from an autocratic system to a market economy, with impressive changes in the economy. The research sector suffered as well, with personnel fluctuations due to both the brain drain of young scientists abroad and the re-orientation of senior scientists towards private units as experts or business people. The number of scientists decreased strongly until 2004, when the funding strategy was changed from a per capita system to a competition of research projects. The Programme Research of Excellence 2005-2008 represented a stimulus for research activity. The investment in R&D in 2006 was 0.49 % GDP; from EUR 100 million in 2004 to EUR 1 000 million in 2008.

Romania

Annual grants 2006-2007 in the frame of university research for young PhDs

Topics	Grant A		Grant A_T		Grant T_D		Grant A consortium	
	Women	Men	Women	Men	Women	Men	Women	Men
1 Math.& natural Sciences	27	49	11	12	14	7	0	1
2 Engineering	41	169	5	8	23	28	0	1
3 Socio humanistic	30	53	10	13	19	9	0	2
4 Life & Earth Sciences	10	27	4	5	17	12	1	1
5 Agriculture & Veterinary Medicine	21	54	1	6	15	19	-	-
6 Human medicine	17	19	1	0	11	6		
7 Arts & Architecture	4	11		1	2	-	1	-

Source: www.rezultate-granturi.ro -

A –multiannual projects of scientific research/ art issues

A_T – multiannual projects of scientific research/ art issues for young scientists

T_D – multiannual individual programmes for young PhD students

80 % from the budget allocated for R&D is managed by the Ministry of Education, Research and Youth, through the National Agency for Scientific Research (ANCS). About 8 % is allocated to the Romanian Academy and 12 % through other programmes under the umbrella of the different branch ministries. ANCS coordinates a total of 59 R&D national and public institutes, headed by 48 male directors (82 %), and 11 female directors (18 %) (1). ANCS has the mission to harmonise national policies of R&D with European policies in order to develop conditions for the integration of Romania in the ERA and to raise the funding for scientific research to 1 % GDP by 2010.

Since 2005 the research funding is achieved by a national projects competition. The first programme 'Research of Excellence' CEEX was launched by the National Authority for Scientific Research and approved by government Decision 368/2005, completed by Government Decree nr.1077/2005.

The projects support cooperation between research institutes, universities and enterprises in order to improve the quality of scientific research in Romania, to increase the number of scientists and their skills and to be involved in high level projects. There are two types of projects:

- Projects for excellent research for young PhDs, with a duration of 24 months, and a maximum budget of EUR 40 000
- Research projects to stimulate scientists to return from stays abroad with a duration of 24 months, and a maximum budget of EUR 50 000 for the entire period for PhD scientists having post-doc stays abroad and EUR 40 000 for PhD scientists defending the degree abroad.

In 2007, there were a total of 22 grants for young PhDs, of which 15 were female (68 %) and 7 were male (32 %).

The law of Equal Opportunities between women and men was adopted in 2002 under the pressure of EU, but the real implementation is still in progress. Romania is among the countries in which gender mainstreaming is not a priority. There is no discrimination between men and women as regards the salaries for the same scientific position, but women are not represented at the same level as men in the decision making positions. According to research policy personnel, such statistics will be available in the coming years.

According to statistics, the number of female scientists and grade A professors in Romania is among the highest in the EU (Grade A: 29.1/EU-25: 15.3; Grade B: 49.1/EU-25:32.2; Grade D: 55.2/EU-25: 43.3). An explanation could be that women prefer to have a stable job, although not so well remunerated as in BES, while male scientists used to migrate toward domains such as banks, entrepreneurship and politics, etc. The high number of private universities, not all accredited, organised after 1990, explains the prominent presence of women in this domain.

There are 8 female rectors in 2008, but only 2 at public universities.
The present data base contains a total of 2,312 national evaluators out of which 602 persons are females, which represent 26 % and 1 711 men (74 %).

Each project is evaluated by the evaluators selected for each call. The proposals both in Romanian and English are submitted on line and evaluated according to international criteria, by three evaluators. Only large projects are evaluated by foreign evaluators. There are no sex-disaggregated statistics available regarding research funding.

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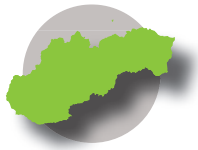
Slovakia

Jana Blahova



R&D infrastructure in Slovakia has been at a low level for a long time, from both a quantitative and qualitative point of view. This situation is a consequence of the low R&D expenditure compared to GDP (gross domestic product) of Slovak Republic per capita ([1]), which is one of the lowest in Europe.
The 'National reform programme of Slovak Republic for 2006-2008' ([2]) elaborated in 2005 and based on the National Lisbon Strategy does not contain any reference to support women's participation in science and research.

In the current legislation, the Slovak Republic uses institutional and targeted R&D financing. Institutional financing of R&D from the government budget encompasses public universities, the Slovak Academy of Sciences and research institutions. Targeted financing of R&D is made through the Slovak Research and Development Agency (SR&DA), the VEGA (grant agency of universities plus Slovak Academy of Sciences), ministries and state programmes.

The Slovak Research and Development Agency (SRDA) is the main grant agency supporting research and development. SRDA is the only instrument for distribution of public finances for research and development (basic and applied) on a competitive basis in all research fields and for institutions in all sectors.

The SRDA provides funds for
- R&D projects in individual groups of science and technology disciplines once a year;
- projects within the programmes;
- projects within the international scientific-technical cooperation agreements and
- projects within the international programmes.

For setting up a fair and transparent granting scheme the Agency has established an organizational structure. Besides the executive director, the SRDA has an Agency Presidium (14 members, including two foreign experts), appointed by the government, which is responsible mainly for priorities setting, budget and other internal policy issues. The members of Scientific Councils (see Table 13, p.47) and Presidium are published on the Web.

The selection of the projects submitted to the SRDA is managed by expert panels (the Scientific Councils) appointed for a period of 4 years by the Minister of Education based on the proposals from researchers (universities, research institutes, Slovak Academy of sciences), non-governmental organisations and the industrial community in Slovakia. Each expert panel has at least one foreign member.

Project evaluation is based on the combination of a peer review process and the decision making of the panel. All research applications are evaluated by three independent reviewers, at least one of whom is from abroad. These experts are asked to review the project proposals. Additional evaluation is done by members of the panel, who summarize the recommendations of the outside reviewers and compile a final assessment of each project. The final assessment is approved by a vote by all members of the panel. Panel members have their competence strictly defined in a document (including conflict of interest) called 'Mechanism of the evaluation', which is published together with other documents during calls. Finally, the panel selects projects to be financed according to a total score of each project and available budget. Nowadays, the Agency has 11 expert panels. Each expert panel evaluates projects separately, keeping in mind ranking and financial budget.

The evaluation conditions (formal and technical criteria, scientific criteria, mechanism of evaluation) are published together with the call on the web pages of the SRDA. Evaluators are anonymous for applicants; applicants are not anonymous for evaluators. Evaluators must describe the relationship with the principal investigator and applicant. Recruiting of the evaluators is based only on professional basis and does not take account of gender equality.

After finishing the evaluation process, the SRDA discloses only the list of funded projects. All applicants obtain anonymous peer reviews and an evaluation report signed by the chairman of Scientific Council.
If a member of the panel has a conflict of interest, s/he is not present during the evaluation of the proposal. The decision on the project is made by a majority of all panel members. Each proposal is evaluated and voted individually.

Data on success rates by scientific discipline, region, sector are monitored and referred to on a regular basis in annual reports.

From the formal aspect there is no opacity in the procedures of the whole grant system. All documents and relevant information on calls, its conditions, budget, and evaluation process are available on the web page www.apvv.sk. Each new call is announced in the relevant print medium. There are no identified barriers in the procedures.

There are no published data on gender monitoring of the project applicants and successful applicants in SRDA. Success rates by gender have been obtained from the internal database of SRDA with the consent of the director.

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Slovenia

Christian Suter

With the National Programme for Equal Opportunities for Women and Men (ReNPEMZM) which was adopted by the National Assembly in 2005, the Slovenian government has committed itself to gender mainstreaming and the implementation of concrete measures to promote and ensure gender equality in the period 2005-2013.

With an annual budget of about EUR 140 million (2006), the Slovenian Research Agency (ARRS) is the major research funding organisation in the country providing financing for basic, applied and targeted research projects, research programmes and fellowships. Basic research projects, i.e. experimental or theoretical work undertaken primarily to acquire new knowledge without any particular application or use in view, are funded up to 100 %. Applied research projects, i.e. projects directed towards a specific practical aim and the development of new products, are funded up to 75 %. Targeted research projects (CRP) are linked to programmes for specific areas of public interest and the strategic development objectives of the Slovenian government; they are implemented and co-financed by the Ministry of Higher Education, Science and Technology (MVSZT) and other ministries. In 2007 around EUR 2.5 million were allocated to this scheme.

Research programmes are carried out by groups or networks of researchers and are intended to cover areas that are of national interest and have long-term relevance or importance for Slovenia. Programme groups comprise a group leader, at least five researchers (holding a doctorate) and technical staff from one or more research institutions (e.g. university). In 2007 the ARRS funded research group programmes with EUR 43 million. The young researchers' fellowship programme, finally, finances students selected by higher education institutions and public research institutes as potential candidates for research positions during their M.A. or Ph.D. studies. These students have a mentor and they take part in the research project as junior assistants. The ARRS supports around 1 200 young researchers every year (about EUR 25 million).

The Agency's highest decision-making bodies are the Management Board and the Scientific Council. The Management Board is made up of seven members appointed by the government (four representatives of the government, two of the research organisations and one of the Chamber of Commerce). Currently the Management Board has only one female member. Its mission is to decide on the selection and financing of projects and programmes on the basis of the draft priority list compiled by the Scientific Council. The Management Board cannot change the priority list, but can ask for supplementary justification from the Scientific Council. The Scientific Council is a professional advisory body comprising six members (from the scientific field), representing six disciplinary areas. At present there are no female members of the Scientific Council. The president and the members of the Scientific Council are nominated by the Minister of Research upon recommendation of the Governmental Council for Science and Technology. The Scientific Council appoints permanent expert bodies (scientific boards by disciplinary area) and temporary expert bodies (scientific boards for specific programmes). At present (2008), 19 of the 71 members of the permanent expert bodies and 5 of the 13 members of temporary expert bodies are female. This means that the target for gender representation (at least one third for both male and female within each disciplinary area) is achieved for temporary expert bodies (38 % female members), but only for two of the seven permanent expert bodies (natural and interdisciplinary sciences with 36 % and 33 % female members).

The foreign and domestic evaluators (each proposal must be evaluated by at least one foreign peer) are selected by the permanent and temporary expert bodies – the list of evaluators has to be approved by the Scientific Council. These experts evaluate proposals individually and make a written report which also includes a grade. For large-scale and highly important calls, a panel discussion and evaluation takes place with all peers, in addition to the individual evaluation. As well as standard evaluation criteria (scientific quality, originality, feasibility, and – for programmes and targeted research – the relevance of the proposal for the theme of the call), scientific output is taken into account (bibliometrics, i.e. a given minimum of scientific publication citations in the last five years). The applicants do not receive the names of the evaluators, but evaluators, in general, know the names of the applicants. If the applicant does not agree with the funding decision, s/he has the right to appeal. This is dealt with by an Appeal Commission appointed by the Director of the ARRS. The final decision is made by the Management Board and afterwards a list of approved grants is published on the Agency's website, as well as the names of the evaluators (for the previous year's calls).

Success rates by gender and grant type are not systematically calculated and monitored by the ARRS and there is no data available on the Agency's website. The ARRS staff in charge of analysis and monitoring kindly provided figures and detailed analyses, based on the Agency funding activity over the last three years. These figures demonstrate that, in spite of the fact that the number of male applicants is more than double the number of female applicants, success rates by gender are almost identical (research projects: 31.6 % for males vs. 30.2 % for females; young researchers' fellowships: 28.5 % for males vs. 26.8 % for females). There are some variations between disciplinary areas: for project funding, male success rates are in general higher than female ones, except for the fields of engineering and social sciences, where women take the lead. For young researchers' fellowships, differences in success rates are somewhat larger with generally better chances for males in all fields except humanities and social sciences. As to the amount of funding, data for 2007 indicate only small differences, with slightly higher overall amounts of funding for male recipients.

Gender monitoring in the research funding system has not been a real concern until recently. Although the relevant data is in principle available within the ARRS, success rates have not been systematically calculated, monitored and published so far. There is, however, a growing awareness about gender equality issues. Hopefully, the development and implementation of instruments allowing systematic gender monitoring will improve this situation in the future. Another challenge is the still low female representation in the ARRS decision-making bodies (Management Board, Scientific Council, and permanent expert bodies) as well as the low number of women in high-level scientific positions.

Spain

Maria Izquierdo

Spain is a middle ranked country in the EU with respect to research expenditure, with relatively high government funding. At the same time, it occupies the fourth position in number of researchers and the seventh in higher education expenditure in R&D. Although women in research are a minority, as in the EU, the relative participation of women in research is higher than the European average. They represent seven per thousand of the labour force and men are nine per thousand, while the respective figures for EU25 are four and nine per thousand and their share among academic staff is higher than the European average in all grades.

The present situation is marked by a participation of women among research personnel similar to their participation in employment, with an unbalanced distribution depending on sector of activity. Non-profit institutions and public administration are the sectors that reach a balance, while the business sector is considerably unbalanced. This situation may be the result of two factors. First, main research activities are related to technology domains, where women are a minority, and second, the impact of possible policies on gender equality is expectably lower in the business sector.

At the same time, there are indications of hierarchical discrimination since the participation of women is highest among assistants and lowest among research professors: women represent 54 % of grant holders, while they are only 16.9 % of research professors (2005) and 27.9 % of principal investigators that participate in calls for applications to research funding (2006). These facts should be a first concern, rather than the impact of assessment criteria and review boards' composition by sex. With respect to success rates, men attain better results than women do in all fields of knowledge, although differences are not very strong, neither are there strong differences between funds requested and funds granted. Two circumstances can favour women's participation in research activities: research funding is growing steadily so there are more opportunities, and equality between women and men is a central topic in government policies.

The main characteristics of the Spanish research system are defined by the law 13/1986 that establishes the Plan Nacional de Investigación Científica y Desarrollo Tecnológico. The body responsible for the elaboration of the plan is the Comisión Interministerial de Ciencia y Tecnología, and the participation of the scientific community is promoted by means of the Consejo Asesor de Ciencia y Tecnología.

The Dirección General de Programas y Transferencia de Conocimiento is the body responsible for activities related to the assessment of research projects. It is based on peer review and takes place in two stages: In the first instance it is anonymous, individualized and remote; in the second stage, the expert's panels are present and identified. Applications are sent to ANEP, Agencia Nacional de Evaluación y Prospectiva, responsible for the assessment procedure by peer review. The selection of assessors is based on criteria of specialization and the selection is made by ANEP's scientific coordinator of each thematic area. The assessment criteria applied are published in the calls.

Once the ANEP has made a first assessment, the Directora General de Programas y Transferencia de Conocimiento appoints, for each of the programmes and sub-programmes of National Plan, a Selection Commission composed by experts from the academic and technology sphere. The selection criteria of its members are based on their expertise although, in more recent calls, it is indicated that parity between men and women will be strived for. With respect to distribution of assessors by sex, it must be noted that women are under-represented. The assessment panels apply the criteria established in the bases of the directive which regulates the granting system.

One important aspect of research assessment processes is the degree of transparency in two main aspects: on the one hand, to produce information on assessment criteria that facilitate preview opportunities to be funded, assessment procedures, composition of commissions, and statistics on performance of experts, by sex of assessors and applicants; on the other hand, to make sure that all information is accessible by means of research funding websites. The situation is clearly improvable in both aspects. It is relatively easy to locate general information, but it is not easy to locate detailed information, particularly statistical data on the composition of assessment commissions by sex, or success rates.

The main weakness of the system is probably the lack of transparency on the criteria of selection of experts that participate in assessment, the degree of publicity of the assessment process, and statistics by sex. The increase in participation of women in research activities, particularly as principal investigator, and in research projects in masculine domains of knowledge, as well as among assessors, should be objectives in the near future.

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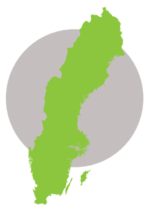
Sweden

Carl Jacobsson



Gender equality issues are generally high on the agenda in Sweden, but the share of women among full professors is still not very high, 18 % (2007; it was 9 % in 1996). There are 35 % women among rectors of 31 Swedish higher education institutions (HEIs) and the share of women in HEI boards, peer review groups etc. is in general at least 40 %. Sweden has a high level of R&D investments, and so Sweden (3.9 % in 2005) and Finland (3.5 % in 2006) are the only EU countries that exceed the goal set by the European Council in Barcelona, that R&D investment should be at least 3 % of GDP in 2010.

By far the largest part of Swedish R&D is funded by and performed within the business and enterprise sector. Companies carried out almost three quarters of the total volume of R&D in 2005, corresponding to about EUR 8300 million (cf. the population of Sweden is 9 million). Most of these activities can, however, be characterized as development rather than research. It is instead the 31 HEIs (incl. the 15 universities but excl. the arts university colleges) that are the main performers of research. As a rough estimate, research activities accounted for at least EUR 2100 million of the total HEI R&D expenditure of about EUR 2400 million in 2005. The institute sector is comparatively small; its total R&D expenditure 2005 was EUR 340 million.

Direct government appropriations constitute 46 % of the total research funding of the HEIs. The remaining 54 % are funded by research councils (13%), government agencies (11 %), research foundations that were originally set up by the government (4 %), private foundations (8%), private companies (5 %) and foreign sources (7 %), mainly EU funding (4 %).

There are three research councils and one agency for innovation systems. There are 16 public research foundations, originally funded with state funds. However, far from all of these funding bodies include success rates of women and men in their annual reports. Moreover, many other government agencies fund research at HEIs. All public funding bodies abide by the Swedish law of public access to information, and so any decision must be made available to any citizen on request.

The peer review groups at the Swedish Research Council and the two smaller research councils generally have an equal representation of men and women, except groups in natural sciences and engineering.

In general, there are no funding programs aimed at women, but in 2007 the Swedish Governmental Agency for Innovation Systems started a seven year programme aimed at future women research and innovation leaders with a total budget EUR 55 million.

The success of men and women who applied for support from the former Swedish Medical Research Council was the subject of the study by Wennerås and Wold (Nature, 1997). A total of 114 applications for assistant professorships received in 1995 were studied with bibliometric methods. It was found that women had to publish significantly more than men to receive the same scores from peer reviewers.

The Medical Research Council was integrated into the Swedish Research Council in 2001. In 2006, a gender equality study of all 17 500 applications received during the period 2003-2005 was published (in Swedish and short English version), and another study was published a year later adding about 11 000 applications for 2006-2007.

When the success rates of men and women applying for project grants were studied, consideration was taken of the differences in 'career-age' (number of years since the applicant attained the doctorate degree) and in subject field. The share of women in the lower career-age groups is much higher than the share of women among the higher career-age groups in all subject fields. This is the result of the career-age distribution of women and men among the teachers/researchers with doctorates at the Swedish HEIs, which in turn is a consequence of the increasing share of women among new doctorates in Sweden – in 1986 only 21 % of the new doctorates were women compared to 46 % in 2006. Both men and women with higher career-age have higher success rates than men and women with lower career-age. When the difference in career-age is compensated for, the success rates of men and women applying for project grants are about the same with some exceptions; in 2003-2006 the men had a higher success rate than women in medicine and in 2007 men had a higher success rate than women in natural sciences and engineering.

During the period 2003-2007 the Swedish Research Council received 3 700 applications for assistant professorships (42 % from women). The success rates were about the same for men and women in each subject field. During the same period the council received almost 1400 applications for fellowships for postdoctoral research periods abroad (40 % from women). In 2005 men had higher success rates than women, but in the other years the success rates of men and women were about the same within each subject field. A bibliometric study of the 2005 applicants in natural and engineering sciences and in medicine revealed no noteworthy differences between women and men applicants. Thus, the study could not explain the difference in success rates in 2005.

The two other, smaller, research councils – the Swedish Council for Working Life and Social Research and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning have made similar studies of

received applications (without career-age considerations, however). No noteworthy differences in success rates between women and men were found 2006 or 2007, but some differences favouring men have been observed earlier (2004-2005) at the Swedish Council for Working Life and Social Research.
In average, the success rate for women was higher than for men applying to the Swedish Governmental Agency for Innovation Systems in 2006.

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Switzerland

Christian Suter

While Switzerland is well known for its outstanding position in science, research and development, and innovation, gender equality norms were institutionalized rather late. Thus, it was not until 1981 that the Swiss constitution was amended to include a specific article on gender equality. The Swiss research funding system began taking equality issues into consideration in the 1990s and attention to this has increased in recent years. This becomes clear in the Swiss National Science Foundation's (SNSF) mission statement on equality between women and men, adopted in 2008, and in two gender-equality-related performance goals mentioned in the SNFS service level agreement 2008-11 (agreement between the SNSF and the Swiss Federal Government).
The leading Swiss funding institutions for scientific research are the SNSF and the Innovation Promotion Agency (CTI). The SNSF supports basic research (project funding and fellowships in all disciplines) and targeted research in selected fields, whereas the CTI supports applied research and innovative development based on cooperation between universities and private companies.
About 63 % of SNSF funding is allocated to 'free' project funding in basic research. About 15 % of SNSF funding is reserved for targeted research, i.e. the National Research Programmes, and the highly prestigious National Centres for Competence in Research. The remaining 22 % of SNSF funding is allotted to various individual fellowships focussing on the different levels of the academic career: doctoral fellowships; postdoctoral fellowships for prospective researchers; postdoctoral fellowships for advanced researchers pursuing an academic career abroad; the so-called ambizione fellowships for incoming/returning junior researchers; and the prestigious SNSF professorships (equivalent to assistant professor level) for junior researchers with several years of research experience.
The SNSF has set several targets for the proportion of fellowships for female candidates: 40 % for the fellowships for prospective and advanced researchers, 35 % for the ambizione fellowships and 30 % for the SNSF professorships. Finally, the Marie Heim-Vögtlin programme is specifically aiming to promote women in scientific careers, particularly doctoral and postdoctoral female candidates who are, or were, forced to interrupt (or reduce) their research activities due to family obligations, or a change of residence as a result of their partner's career development.
Eligibility for SNSF grants depends on the funding type – usually a doctoral degree is required. All applications are evaluated by the SNSF National Research Council composed of four divisions and three specialised committees. Each application for a grant is considered by two members of the Research Council (rapporteurs) whose recommendation is based on 3-5 individual peer reviews by Swiss and foreign experts (and/or on review panels). These experts are selected by the members of the National Research Council and the staff members at the administrative offices. Evaluators know the names of the applicants, but applicants do not know the evaluators' names. The decisions on research funding made by the Research Council divisions and specialised committees (on recommendation of the two rapporteurs) have to be confirmed by the SNSF Presidential Board, consisting of the President of the Research Council and the presidents of the four divisions and the three specialized committees.

Switzerland

Success rates of SNSF 'free' project funding, selected disciplinary areas, 2007

Disciplinary area	Success rate		
	Total	Women	Men
Philosophy, religious studies, educational science	53 %	39 %	57 %
Social sciences, economics, law	60 %	65 %	69 %
History	75 %	79 %	74 %
Linguistics and literature	58 %	48 %	63 %
Mathematics	90 %	(100 %)	89 %
Chemistry	88 %	79 %	89 %
Physics	91 %	(100 %)	91 %
Engineering	68 %	(50 %)	69 %
Environmental sciences	73 %	(88 %)	85 %
Earth science	83 %	(67 %)	86 %
Biology – basic research	78 %	68 %	80 %
General biology	67 %	(64 %)	68 %
Medical sciences – basic research	70 %	59 %	73 %
Medical sciences – experiment research	59 %	70 %	56 %
Medical sciences – clinical research	39 %	38 %	40 %
Total 'free' project funding (divisions I–III)	66 %	58 %	68 %

Source: own calculation based on SNSF Annual Report 2007, p. 40; figures in brackets: n<10.

Evaluation criteria are common excellence standards: scientific quality, originality, project methodology, feasibility, as well as qualifications and track record of the applicants. In 2008, 21 % of the 96 members the Research Council and 2 of the 8 members of the Presidential Board are female (the target for both bodies set for 2011 is 25 %).

Success rates by gender and grant type are monitored by the SNSF. Yearly data on gender-specific success rates are published in the Annual Report and on the SNFS website. The success rates of female applicants in 2007 were in general lower than those of male applicants as regards 'free' project funding (cf. Table); this is consistent with the empirical evidence presented by Bornmann et al. (2008) for the 2004–06 application period, demonstrating that the overall gender effect is due to the effects in three specific subject areas. In fact, there are substantial fluctuations between and within disciplinary areas as well as from year to year. Moreover, success rates for individual fellowships (i.e. for younger scientists) are higher for women than for men (e.g. in 2007: 32 % for females compared to 22 % for males as regards the SNSF professorships).

A detailed study on gender-specific success rates was launched by the SNSF in 2004/06. The results of this study indicate no significant gender differences in application behaviour, success rates and amount of money granted (after controlling for third factors like age, cohort, disciplinary area, migration etc.). 'Leaky pipelines' and processes of 'cooling out', however, are characteristic of female career paths – these processes already start with the transition from MA to the doctoral level (cf. Leemann and Stutz, 2008).

The SNSF has been engaged in gender equality planning and monitoring since 2000: Thus, a temporary task force on gender equality and women's advancement policy was formed in the years 1999-2001 (cf. GRIPS Gender 2001). In 2002, a permanent SNSF Equal Opportunities

Commission and a special office for promoting equal opportunities was established. Finally, the SNSF introduced a gender monitoring system in 2008. There are only few barriers to transparency, if at all. Applicants do not receive the complete evaluation reviews, but only extracts.
The SNSF gender monitoring and the results of the above-mentioned study suggest that there are no overall systematic gender inequalities in SNSF funding, nor are there significant gender differences as regards application behaviour. There is, however, evidence that the academic system (e.g. the universities) does not sufficiently promote the careers of female scientists to prevent them from dropping out, particularly in the early stages of their scientific careers.

Turkey
Maaike Romijn

In Turkey more than in any other European country the number of women participating in scientific research and teaching is high. According to She Figures 2006 in 2004 the percentage of female professors (grade A) was 25.5 %. As in many other European countries, the percentage of female academic staff declines the higher the position. There is a serious decline between grade C and B but a remarkably small difference between B and A, as is the thin glass ceiling (1.1). Turkey has another distinctive characteristic: the proportion of women in engineering is higher than in many other European countries.

There are various funding organizations in Turkey such as the Scientific and Technological Research Council of Turkey (TÜBİTAK), State Planning Organization (DPT), the Technology Development Foundation of Turkey (TTGV) and the Turkish Academy of Sciences (TUBA). TÜBİTAK is the most important research funding organization in which the Academic Research Funding Programmes Directorate (ARDEB), the Technology and Innovation Funding Programmes Directorate and the Department of Science Fellowships and Grant Programmes (BIDEB) are the most important for individual funding.

In both ARDEB and BIDEB grant programmes, eligibility is partly restricted due to age limits. Excellence is the main selection criterion, specifically intellectual merit, broader impact, and feasibility.
Applications are assessed in a panel-based proposal review system. All proposals are classified by their fields of research and sent to research grant committees. These further divide the proposals into groups in terms of specialized topics and identify a set of referees whose expertise can cover the research topics of the proposals in a specific group. The proposals in a specific group are sent to the assigned set of referees. After receiving their advice, the panel convenes to evaluate all the proposals collectively. During the panel meeting, each proposal is given a score of 0.2 and 3 with respect to the criteria. Proposals are funded according to their weighted scores and availability of funds.

TÜBİTAK provides the framework conditions, taking into account the Code of Conduct for the Recruitment of Researchers. In this context, while determining selection committees, TÜBİTAK attaches importance to design committees with diversified and competent experts. National evaluators are recruited for the panels. TÜBİTAK maintains a database where researchers enter their research related information. Currently, there are more than 50 000 records in this database. In addition, TÜBİTAK keeps records of referees who attended previous research panels. These information resources are used for identifying evaluators for the proposals.
Although it is preferred to have higher ranked evaluators, there is no special academic rank requirement to be an evaluator. However, evaluators selected from universities are at least associate professors with at least 10 years experience. According to TÜBİTAK, gender balance, representation of different disciplines and sectors and participation of foreign researchers in the country are always taken into account when selecting evaluators. Evaluators are paid for the evaluation process and travel expenses.

The TÜBİTAK BIDEB programmes aim at increasing the trans-national mobility for training and career development of researchers. Women are successful in obtaining funding in TÜBİTAK BIDEB and ARDEB programmes.

Although the proportion of women in engineering is higher than in many other European countries, women remain underrepresented in Engineering and Technical Sciences, but they are more successful in getting funded. Women are far better represented in Medical Sciences and again more successful than their male counterparts. And even in Social Sciences and Humanities women are underrepresented, unlike many other European countries, but again more successful than their male counterparts.

As to the scientific disciplines, women hold no majority in any science, but they seem to be better divided into different disciplines than in other European countries. So does TUBITAK access their full female potential?

Turkey

BIDEB and ARDEB programmes, 2008

TUBITAK	Proposals N (%)		Funded projects N (%)	
	Male PI	Female PI	Male PI	Female PI
BIDEB	3477 (73%)	1287 (27%)	905 (71.4%)	362 (28.6%)
ARDEB	3940 (73.7%)	1405 (26.3%)	1181 (72.6%)	445 (27.4%)

(TUBITAK, Basaran 2008)
PI = Principal Investigator

BIDEB is aimed at the early career stages, in which women represent about 40% and therefore one might expect more female applicants. ARDEB aims at different career stages, but one might still expect more female applicants with regard to the participation of women in Turkish science, according to She Figures 2006: 41.6% (grade D), 40.5 (grade C), 27.4% (grade B) up to 25.5% (grade A).

With regard to these percentages, a fair share of women as members of the prestigious Turkish Academy of Sciences (TUBA) could be expected, but the participation of women is only 13.7%.

In comparison to other European countries, women are very well represented in Turkish science, although not equally. Women are also doing well in obtaining funding.

United Kingdom

Louise Ackers,
Debbie Millard

The UK has one of the largest research sectors in Europe. R&D expenditure (GERD) as a percentage of GDP was 1.76% (2005), falling just below the EU average of 1.84%. There has been considerable interest in attracting and retaining women in science to improve the supply of scientists and engineers, with several reports and initiatives. An audit of Wellcome Trust identified low application rates for research funding by women, and was followed by a larger study of Wellcome Trust and research council funding (Blake and LaValle 2000). The Research Councils are working with UK Resource Centre for Women and Science to analyse diversity data on research funding, raise issues, increase the number of women in research decision-making and promote good practice.

UK research funding is based on a 'dual system', the funding councils providing infrastructure funding in the form of block grants, and research councils, learned institutions, charities, notably the Wellcome Trust, and government departments providing project funding. The research councils are: The Engineering and Physical Sciences Research Council (EPSRC), the Science and Technology Facilities Council (STFC), the Medical Research Council (MRC), the Biotechnology and Biological Sciences Research Council (BBSRC), the Natural Environment Research Council (NERC), the Economic and Social Sciences Research Council (ESRC), the Arts and Humanities Research Council (AHRC). The majority of applicants for research projects are academic staff. Research staff are generally on fixed term contracts and are not eligible to apply although this situation is beginning to change in response to the Directive on fixed term work. All major funding organisations make awards based on peer review, using external reviewers and research council peer review panels, with some variation in procedures. Generally, applications are sent to the research councils and are then sent to external reviewers, who carry out the review and advise panel members.

Information on peer review processes and data on success rates, numbers of projects funded, lists of individuals granted funding and list of peer review panels and colleges are publicly available, as is some data by gender. The following gives success rates and application rates for research grants for some of the most important providers of research funding (the BBSRC, the EPSRC, the NERC and the STFC). Data from previous years shows similar trends.

UK

Success rates of various Research Councils

	Male	Female
BBSRC Project grants 2006 success rates	27.2 %	23%
BBSRC project applications 2006	78.1 %	21.9 %
EPSRC research grants success rates	27 %	27 %
NERC project grants success rates	25 %	19 %
NERC application % and numbers	80 % (827)	20 % (207)
STFC project grant applications % and numbers	87.2 % (275)	13.4 % (37)

Sources: BBSRC (2007) EPSRC (2007) NERC (2007) STFC (2008)

Women have been slightly less successful in obtaining standard research grants, a trend in recent years. Applicants to the BBSRC, the NERC and STFC tend to come from respectively, biosciences, environmental sciences and physics (although they do not correspond exactly). Of these disciplines, biological sciences have the highest numbers of women, followed by environmental sciences and physics. In 2006-07, 29.5 % of academic staff in biosciences, 22.3 % in Earth, Marine and Environmental Sciences and just under 10 % in Physics were women (UKRC 2008). As would be expected the highest number of women applicants applied to the BBSRC (21.9 %), followed by NERC (19 %) and STFC (13.4 %). Some research councils have research grants aimed at new investigators (e.g. BBSRC, EPSRC), which have attracted more women and in some cases women have been more successful.

The peer review system in the UK is fairly transparent and data is easily available; availability depending on the organization. Women are poorly represented at senior levels in academic posts, and there is evidence that they apply less for funding and are slightly less successful than men in obtaining funding. There is high awareness of the issues and there have been several initiatives to improve the situation.

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European Commission

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The Gender and Excellence expert group was set up to provide recommendations on the improvement of transparency in the procedures used in selection committees for the award of grants and fellowships and in access to research funding in general.
This report gives an analysis of the gender dynamics among applicants, recipients and gatekeepers of research funding, in funding processes, instruments and criteria, and the role of key funding organisations in promoting gender equality in research.

The analysis was carried out in 33 countries, an overview of which is annexed to the report. These countries could be roughly divided into two groups: proactive countries, which promote and monitor gender equality in research and research funding with active policies and measures, and countries relatively inactive in this area, with few, if any, initiatives.

The expert group has not found a large and systematic gender imbalance in terms of success rates in research funding in the funding systems studied, although a few exceptions exist. However, there is a clear difference in application behaviour: women are less likely to apply for funding than men, and this needs further study. To encourage the funding organisations and other stakeholders to take the gender challenge in research funding seriously in practice and take action, this report provides a number of recommendations, flags up some good practices, and outlines future research themes.

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