POLICY FORUM: WOMEN IN SCIENCE

European Strategies for Promoting Women in Science

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The promotion of women's participation in science at the European Union (EU) level began in 1998, as a result of a number of converging factors. First, gender equality is enshrined in Articles 2 and 3 of the Treaty of the European Community as one of the main objectives. In addition to this, the European Commission has adopted a mainstreaming strategy by which each policy area must contribute to promoting gender equality. This requires that careful thought be given to the impact of the gender dimension on research. Finally, women scientists themselves have been instrumental in placing the debate firmly on the European agenda. Indeed, they and women's organizations were extremely active and effective in voicing their concerns during the negotiation of EU research policy for the period 1998–2002. The extent to which the women-and-science issue has developed at the European level over the past three years is striking and has triggered much attention from the media, policy-makers, and scientific institutions alike. To help us move forward, this policy forum provides a status report of recent thinking and initiatives.

Defining the Complexities

The most visible part of the women-and-science debate is the huge underrepresentation of women in scientific research. The European Technology Assessment Network (ETAN) report (*1*) clearly demonstrates that, although women constitute more than half of the student population across Europe, they hold fewer than 10% of the top positions in the academic system. This underrepresentation is less severe in Southern Europe and in Finland than in the rest of the European Union.

The ETAN report discounts the traditional explanation that this underrepresentation is due to the comparatively recent arrival of women into university education. The Italian Research Council examined the career progress of 1088 senior researchers over 10 years (from 1988 to 1998) and found that only 12.8% of women as compared with 26% of men reached the most senior positions. Similarly, analyses have been carried out in Germany showing that, in 1997, the number of women and men at each stage of their academic careers did not correspond to the proportion that could have been expected, on the basis of the composition of undergraduate classes. In the United Kingdom, 50% of biology graduates are women and have been for the last 30 years, and still women only hold only 9% of full professorships.

Women are facing discrimination in their scientific careers. The forms of discrimination are subtle, cumulative, and, for the most part, unconscious. They are deep-rooted, both in society and in the scientific system itself. Women accumulate disadvantages of different kinds throughout their lifetimes, which add up to a huge gap at the end of their careers (*2*). This is backed up by the 1999 Massachusetts Institute of Technology report on the status of women faculty in science, which shows that women faculty members had less office space, less pay, and less research funding (*3*). Women were made "invisible."

Participants at the Gender and Research Conference in Brussels (8 to 9 November 2001).

Biographies, as well as quantitative studies (*4*), demonstrate that women have to outperform men in order to obtain equivalent recognition. A study in the Netherlands (*5*) analyzed the success rates of male and female applicants to the main research funding agencies. It found that, whereas the evaluation of men was in line with academic merit, gender plays an independent role in the evaluation of women. Given the importance of neutrality, objectivity, and excellence in science, there is reluctance to recognize this within the scientific system. At a conference in Brussels in April 1998 (*6*), six women scientists spoke out about their lives as scientists. Their accounts highlighted the difficulty and the "unusualness" of being a woman in science, showing that, beyond the underrepresentation of women in science, there is an issue of uneasiness experienced by the (too few) women who are in science. For women to feel at home in scientific research, there will need to be profound changes in thinking and behavior, both from men and women.

An Inclusive, Broad-Based Strategy

In February 1999, the European Commission adopted a communication (*7*) in which it presented an action plan on women and science. This plan was conceived so as to provide a platform for all stakeholders, including women scientists, policy-makers, and scientific institutions. It aimed to be inclusive in its approach, in order to reflect the wide diversity of approaches within the European Union. This is also why the term "science" is understood in its widest sense, ranging from natural to social science, including—but not restricted to—Science, Engineering, and Technology (SET).

In its communication, the European Commission proposed that three aspects of the gender dimension in research be examined. The first aspect (research by women) addresses the question of women as researchers and concerns mainly the issue of underrepresentation as set out above. The second aspect (research for women) refers to the gender dimension of the research agenda and how women's specific needs are being addressed within research. The third aspect recognizes the relevance and impor-

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tance of gender research itself in providing a better understanding of gender in the way in which society functions.

Pooling National Policy Experiences

With a view to developing dialogue about national policies among Member States, the European Commission established the "Helsinki Group" in November 1999, to which each member state and associated state has nominated a civil servant responsible for the promotion of women in science at national level. Within the Helsinki Group, member states and associated states exchange experiences and discuss measures that they have undertaken, providing a comparative perspective and strengthening the efficiency of actions taken as a whole. The group is currently finalizing a report, to be published in Spring 2002, that will set out the different national backgrounds and policies, including the arguments for and against positive discrimination.

The Helsinki Group is also developing a system of gender indicators to monitor progress toward gender equality in European research. At present, there is no systematic collection of sex-disaggregated data on research staff at the European level, and existing data are very fragmentary. As part of a project launched to improve the situation, the Helsinki Group is providing the European Commission with existing primary, sex-disaggregated data for students, graduates, research staff in universities, and research staff in research centers. From the data collected, indicators will be developed corresponding to the following identified policy objectives: increasing the number of women in science, reducing both horizontal and vertical segregation (*8*), eliminating pay gaps, and ensuring fairness and equity. Further data will surely be needed as well.

Mainstreaming Gender

The European Commission has undertaken (*9*) the Gender Watch System for monitoring practical and policy developments and ensuring that gender issues are taken into account wherever relevant. Still very much in its early stages, the Gender Watch System will be developed and reinforced in the new Framework Programme, building upon experience and recommendations from the Fifth Framework Programme.

With regard to the "research by women" perspective, action has mainly been taken along two lines: increasing women's participation in panels and assemblies, and producing statistics. As a result of this action, the participation of women in peer-review panels has dramatically increased in 1999 and 2000, reaching 22% in 2000, as compared with a very low 10% between 1993 and 1998.

A series of gender impact studies have recently scanned the implementation procedures of the different specific programs and the set agenda in all areas of EU research. This appears to have been a pioneering exercise both at the European level and internationally. The studies have identified areas that require careful consideration, such as how the use of language and concepts can determine the direction of scientific practice, the questions asked, the results obtained, and the way in which those results are interpreted. In general, the studies show that there is a systematic tendency to overlook the gender dimension of the research question, even in areas where it is the most obvious, such as the life sciences or socioeconomic research. They have also looked at the practical obstacles facing women scientists and the question of gender equality in mobility. The results have been published in the form of individual reports and one overall synthesis report (*10*) and were presented at the "Gender and Research" conference organized by the European Commission in Brussels on 8 and 9 November 2001 (*11*). All the studies point to the need to integrate gender explicitly at all stages of the policy process, that is, calls for proposals, proposal, evaluation, contract, and finally the research itself. It is hoped that this will trigger a process whereby the gender dimension is recognized as being a component, among others, of scientific quality. Clearly, however, the gender blindness identified by the studies is a characteristic of research in general, and there is no "ready-to-use," alternative, gender-sensitive research. Such a substitution will require new strands in knowledge development, and this will take time.

Toward More Gender Equality

In the new strategic perspective of the European Research Area, the promotion of gender equality in research remains high on the political agenda, as confirmed by Achilles Mitsos, director general for Research at the European Commission, in his closing address to the November conference. In the next Framework Programme (*12*), policy dialog will be reinforced with Central and Eastern Europe and extended to the private sector (which accounts for 60% of European research). Working groups will be set up to analyze the situation of women scientists in these areas and to identify common frameworks for future action. Networks of women scientists also have an active role in terms of voicing women scientists' concerns and supporting women scientists in their careers. A network of networks will be established by the European Commission, with a view to connecting these groups with each other and with national and European policy processes.

Within the EU research policy itself, recommendations from the Gender Impact Assessment Studies will be followed up and fed into the Gender Watch System. The target of 40% of women's participation in assemblies and panels will be maintained. Contractors will be asked to contribute to promoting gender equality in the course of their projects. Evaluation criteria will address the gender dimension of the research agenda. Particular attention will be paid to the participation of women in fellowships and to gender research in the socioeconomic field. To underpin all these activities, specific research will be supported to improve the understanding of the gender-and-science issue in Europe and to develop tools to support the policy process. These important and far-reaching perspectives are presented in full in a recently published working paper of the European Commission services (*13*).

References and Notes

1. Research Directorate-General, EC, *Science Policies in the European Union: Promoting Excellence Through Mainstreaming Gender Equality* (ISBN 92-828-8682-4, Office for Official Publications of the European Communities, Luxembourg, 2001), 158 pp.
2. V. Valian, *Why So Slow?: The Advancement of Women* (MIT Press, Cambridge, MA, 1999), 424 pp.
3. A Study on the Status of Women Faculty in Science at MIT (Massachusetts Institute of Technology, Cambridge, MA, 1999); available at web.mit.edu/fnl/women/women.pdf.
4. C. Wennerås, A. Wold, *Nature* **387**, 341 (1997).
5. M. L. M. Brouns, "The quality of the evaluation: an inquiry into gender and evaluation systems of NWO and KNAW" [in Dutch] (Nederlands Genootschap Vrouwenstudies, Utrecht, Netherlands, 1999).
6. Women and Science—Proceedings of the conference, Brussels, 28 to 29 April 1998 (ISBN 92-828-5752-2, Office for Official Publications of the European Communities, Luxembourg).
7. Communication of the Commission, "Women and Science: Mobilising women to enrich European research" [COM(1999) 76, Commission of the European Communities, 17 February 1999]; available at www.cordis.lu/improving/women/communication.htm.
8. Horizontal segregation refers to the concentration rates in occupational sectors or disciplines. Vertical segregation concerns the position of women and men within the hierarchy.
9. The EU research policy consists mainly of financing research undertaken by transnational partnerships.
10. These can be requested from pauline.van-greuningen-smith@cec.eu.int.
11. To request proceedings, which will be published in the first semester 2002, contact linda.maxwell@cec.eu.int.
12. Decision of the European Parliament and of the Council, "Concerning the multi-annual Framework Programme 2002–2006 of the European Community for research, technological development and demonstration activities aimed at contributing towards the creation of the European Research Area" [COM(2001) 94, Commission of the European Communities, 21 February 2001].
13. Commission Staff Working Paper, Women and Science: the gender dimension as a leverage for reforming science [SEC(2001) 771, Commission of the European Communities, 15 May 2001]; available at ftp.cordis.lu/pub/improving/docs/g_wo_sec771_en_200101.pdf.