

Tapping into the pool of women

Facing a serious shortage of skilled workers, Europe's high-tech economies are discovering the value of working women

Several studies have recently investigated the future demand for scientists in the European economies, the most comprehensive being The European Commission (EC) Futures Project published in 1999. And the results did not bode well for Europe. A lack of skilled personnel could mean lower growth and profits, and Europe might simply 'miss the boat' in the formation of some crucial high-tech industries in the coming years. More specifically, a detailed analysis of the academic workforce in Germany paints an even bleaker picture of the country's future prospects in the high-tech sector. Its recent biotech boom, the study found, was due mainly to a large excess number of graduates in science, engineering and technology from which German high-tech companies were able to hire the trained personnel they required. But with this surplus depleting and the falling numbers of new graduates, this so-called 'window of competence' will close in 2002 and the ensuing lack of qualified workers is expected to seriously hamper further growth in this area.

And Germany is not the only country facing this problem. Sir Gareth Roberts' 'Review of the supply of scientists and engineers', instigated by the UK Treasury and scheduled for publication in March 2002, is expected to announce similar results for the UK economy. In addition to the looming shortage of skilled workers, Europe is also lagging behind in investment into qualified personnel. On average, the EU has only five researchers per 1000 workers, compared to seven in the USA and nine in Japan. The annual growth rate of the workforce in research, technology and development is only 1.6% in the EU, whereas it stands at more than 2% in the USA. Furthermore, some of the highly technologically developed countries, such as Germany, Scandinavia and The

Netherlands, have an older workforce and will thus have a greater demand for skilled workers in the future, leading to a required growth of 8% instead of the actual 1.6%.



At the same time as the high-tech sector is finding it increasingly difficult to hire skilled workers, many European countries are ignoring a huge untapped pool of workers: women. In 1998, an average of 51% of women in the EU were employed (compared with 71% of men), ranging from 37% in Italy to 63–67% in Scandinavia. In contrast, 67% of the women in the USA work. In the academic sector, the situation in Europe is even more dire. On average, only 10% of full professorships or equivalent posts in the life sciences are held by women, even though the numbers of male and female undergraduates are equal. The proportion of women in physics, mathematics and engineering is even lower. And this has not changed significantly over the past 20 years.

The problem of the under-representation of women in leading positions in academia

has recently received a lot of attention, if measured by the number of meetings held on this topic. A great deal of talk about a small number of women. Indeed, it seems that the times are changing and that women are finally being recognised for their economic value, not only because they could fill the gap between supply and demand in the high-tech sector, but also because the workplace itself has changed over the last 20 years and now has a greater need for the special skills that women can contribute.

Karl-Heinz Minks (University Information System GmbH, Hanover, Germany) discussed new target groups in scientific and technical disciplines at the congress 'Future Opportunities Generated by Diversity in Higher Education and Training' in Munich in February 2002. He remembered giving virtually the same talk deploring the lack of female students and employment opportunities 20 years ago to a similar, largely female audience. But he was much more optimistic about women's

present-day chances in the labour market. 'Firstly, women today have much better, more effective and active networks. They are more proactive and are not only deploring their suppression. Secondly, the workplace has changed: soft skills, such as the ability to communicate and work in a team are in high demand, interdisciplinarity is a must. These are characteristics that are usually associated with women. Thirdly, 20 years ago there was also a shortage of scientists and engineers anticipated but women were seen as a reserve army. Today we anticipate a real need for the skills of women in the future.'

But where are all these women who started studying and then disappeared somewhere along the path to group leaders or professors? The UK's Department of Trade and Industry (DTI) report 'Maximising returns to science, engineering and

technology careers' (published in January 2002) investigated whether the investments made in training graduates in science, engineering and technology are efficiently utilised, and it revealed that 25% of the women with an academic degree and children are unemployed. It concluded that the largest pool of currently unemployed graduates were women who had taken time off mainly to

Women') to make the sciences more attractive for women. These are in addition to other measures described in the Academy of Finland's Equality plan. In particular, the Finns are committed to monitoring academic institutes and universities, achieving 40% representation of women in research posts, installing expert tasks and working groups, extending research projects or posts for parental

scholarships to female students, improve the gender balance in research recruitment and promotion committees and to create a unit for gender equality. France's main funding organisation, the Centre National pour la Recherche Scientifique (CNRS), also reacted and established a committee ('The place of women in the CNRS') to work out appropriate guidelines.

The Swiss National Science Foundation (SNF) has abolished age limits for female applicants on a trial basis until December 2003 and established an equality commission that suggested a female quota of 30% for assistant professorships and a quota of 20% for applicants for research projects. This comes together with a restart fellowship for female scientists who have taken a break in their research careers to care for their children.

The UK's Medical Research Council (MRC) has abolished all age limits for its grants and fellowships and has extended part-time awards to ensure parity with full-time awards. It is now seeking additional funding to cover award extensions for female scientists who delay their work as a result of maternity leave. Four other funding schemes in the UK—The Daphne Jackson Trust, The Wellcome Trust, the Engineering and Physical Sciences Research Council (EPSRC) and The Laura Ashley Foundation—also support women who decide to return to the bench.

At the European level, the EC has established a Women and Science unit to assist in devising European strategies that aim at promoting women in science. Its activities have stimulated national governments to take action, not least through the

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care for their children. Taking all these facts together, it appears that the opportunities for women in the sciences have really improved from the point of view of demand for (wo)manpower.

In order to tap into this pool of unused labour—approximately 50 000 graduates—the report recommended actions to smooth the way for women to return to work after having a family. Specifically, it asked for technical training and further education during a transition period in which women re-adapt to the workplace. For the academic sector, it suggested two additional measures: first to provide specific posts to which people could return after a break, such as that of 'head of laboratory'; and, secondly, to ensure that returning women would not suffer from either gaps in their research CV or their higher age relative to their experience.

A large number of measures to improve women's position in science have been suggested, such as changing the way the sciences are taught in order to attract more women, mentoring programmes, networking, re-entry programmes, abolishment of age limits, availability of day-care for nursery, kindergarten and school age children, data monitoring and reporting, setting of target values for the number of women recruited to specific posts, affirmative action, quota, etc. Although encouraging, none of these are new suggestions and have all been made on various occasions over the last 20 years with apparently little response.

But now, threatened with a shortage in the workforce, governments and national funding agencies finally seem willing to take action. So far, the Finnish government has drafted the most comprehensive plans ('Acts on Equality between Men and

leave, providing information on gender distribution, increasing the salary for researchers in training by 20% for child support and providing incentive money for grant writing or return from parental leave. And Finnish universities have drawn up their own equality plans to complement the government's actions. But the Finns are not complacent and expect that these measures are only a beginning and will have to be reviewed by 2004.

In Germany, the Ministry for Education and Research (BMBF) Women in Education and Research unit has started a number of projects, such as the Center of Excellence and the Center of Competence to support women in science. The DFG (German Research Council), Germany's largest funding agency, is also currently working on a 5-year plan ('Perspectives in Research', to be published in summer 2002) that will present a set of measures to promote women in science. In the

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interim, the DFG offers the option of using stipends on a part-time basis, automatic extension of stipends by 3 months for maternity leave and additional support for childcare. On a more practical basis, a pilot study at the University of Trier aims to produce guidelines on how to create a more family-friendly environment within German universities.

Elsewhere, following a call by prime minister Lionel Jospin, the French government has started to look at the fate of women in science. The French Minister of Science proposed to attribute more PhD

establishment of the Helsinki Group, which is developing a system of gender indicators to monitor progress toward gender equality in European research. For its part, the European Molecular Biology Organization (EMBO) has recently announced a number of restart fellowships designed to encourage women back into scientific research following a career break.

Still, it remains to be seen whether this sudden explosion of activity on behalf of women will bear fruit or whether it will fizzle away into nothing. Crucially, the measures that need to be taken cannot

Some links for further information on measures to promote women in science

The EC's Futures Project: <http://futures.jrc.es>

Future demand of skilled personnel in Germany: Staudt, E. and Kottmann, M. (1999) Employability von Naturwissenschaftlern und Ingenieuren. In Staudt, E. (ed.), *Innovation: Forschung und Management*, Vol. 15. Bochum, Germany.

Sir Gareth Roberts' Report: http://www.hm-treasury.gov.uk/newsroom_and_speeches/press/2001/press_70_01.cfm

'Maximising returns' report, DTI: <http://www.dti.gov.uk>

Academy of Finland Equality Plan: http://www.aka.fi/index.cfm?main_frame=http://www.aka.fi/users/318/2495.cfm

University of Helsinki Equality Plan: <http://www.helsinki.fi/tasa-arvo/english>

BMBF women's unit: http://www.bmbf.de/249_1348.html

University of Trier pilot study: <http://www.familiengerechte-hochschule.de>

Mission pour la place des femmes, CNRS: <http://www.cnrs.fr/cw/fr/accu/missionFemmes.html>

SNF's re-start fellowships: http://www.snf.ch/de/fop/awa/awa_wom.asp

and the recommendations given by the working group for gender parity: http://www.snf.ch/de/wom/wom_enc.asp

The Wellcome Trust's re-entry fellowships for women in the UK: <http://www.wellcome.ac.uk/en/1/biosfgcdpfunsumbbs.html>

The Daphne Jackson Trust: <http://www.sst.ph.ic.ac.uk/trust/>

EPSRC: <http://www.epsrc.ac.uk/>

The Laura Ashley Foundation: <http://www.laf.uk.net/fellowships/fellowships.htm>

The EC's Women and Science unit: <http://www.cordis.lu/improving/women/home.htm>

The first international re-entry fellowship by EMBO: http://www.embo.org/projects/women/restart_fellow.html

EMBO's position paper on the place of women in science: <http://www.embo.org/projects/women/index.html>

reside only within the research sector, but need to pervade all of society, because women's demands can only be met if society is willing to change. This involves the provision of affordable full-time day-care for children, a problem that is particularly acute in Germany, Austria, Switzerland and The Netherlands, where full-time kindergartens are a rarity and school ends at 1 o'clock at the latest. But also in countries with full day schools, parents still need to make provisions for the school holidays. All measures that are being proposed will be useless if this problem is not solved, as the primary reason for women not returning to science is the incompatibility of a science career with a family.

And doing science part-time is not the best option, as Nobel Prize Laureate Christiane Nusslein-Volhard (Director of the Max-Planck Institute, Tübingen, Germany) pointed out at the recent press conference for the launch of EMBO's restart fellowships. Indeed, under the

present circumstances, women do themselves no favours when working part-time in academia because their productivity suffers, which will be held against them when their CVs are judged at job interviews or when applying for grants, she said. Her younger colleagues have even more radical demands. Renée Schröder (Professor for Biology, University of Vienna, Austria) and recipient of the L'Oreal Special Honor Award for Women in Science, demanded that 'age limits for careers have to be

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abolished! Why should somebody not go back to science at the age of 40, once the children go to school? You still have 30 years of doing science before you.' Thus, the abolishment of age limits by the UK's MRC, Switzerland's SNF and EMBO are certainly steps in the right direction.

Increasing the number of women in the sciences is one thing. Increasing their number in positions of real power is another, and it remains to be seen if this will really change. Simply increasing the pool of women from which to recruit may do the trick, but examples from the Scandinavian countries and the USA, where the number of female senior faculty members has remained stagnant at around 10–20%, are not encouraging. And quotas have proved to be quite unpopular, as being a 'quota woman' always leaves a bad taste. On the other hand, as Mary Clutter, Assistant Director of the US National Science Foundation, puts it: 'It is better to be in a position of power than not to be in a position of power.' Maybe that is all that matters.

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