



VAN

FP6/2004/IST/NMP/2 - 016969 VAN

Virtual Automation Networks

Work Package 10
Exploitation and Dissemination

Task 10.3
**Establishment of European Competence
Group**

Deliverable 10.3-2-V3
Gender-Action-Plan Report

Document type	: Report
Document version	: Final version
Document Preparation Date	: 04.09.2008
Classification	: Public
Contract Start Date	: 01.09.2005
Duration	: 31.08.2009



**Project funded by the European Community
under the "Information Society Technology"
Programme (2002-2006)**

Rev.	Content	Resp. Partner	Date
1.0	First draft (some contributions missing)	CARTIF	29.07.08
2.0	Version to be distributed for internal review inside the consortium	CARTIF	28.08.08
3.0	Final reviewed version	CARTIF	04.09.08

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Executive summary

This document corresponds to deliverable D10.3-2 V3 "Gender-action-plan report". It belongs to task 10.3 Establishment of European Competence Group, from work package 10, Exploitation and Dissemination.

This is the third report on gender issues for VAN project and aims to show the progress achieved during last year by VAN partners towards reaching an acceptable participation of women inside the project. The first version (D10.3-2 V1) was delivered two years ago and introduced the methodology and objectives, together with the situation regarding women participation inside VAN at that time.

After the introduction, chapter 2 gives an overview on the current status of women participation inside ICT. Then, chapter 3 presents current data from VAN partnership and compares it with the information gathered last year showing the related evolution.

Finally, chapter 4 presents the main conclusions from the report.

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1 Introduction

The ICT sector is a key contributor to EU growth. It contributes 5.3% of EU's GDP and 4% of its jobs [WOM07]. It also accounts for 20% of economy-wide labour productivity growth. The ICT sector achieves above-average growth and is the EU's most innovative and research-intensive sector, accounting for 25% of the total EU research effort in the business sector.

However, less and less young people, particularly women, take up ICT-related subjects or pursue an ICT career. Without the necessary number of well-skilled employees the sector has no chances to remain competitive. It is expected that there will be a shortage of 300,000 qualified staff in this sector by 2010. This problem is not limited to Europe; in fact it is international. One way to reverse this negative trend is to encourage young people, particularly women, to take up an ICT-related career. Women are a potential for the ICT sector that has been little considered so far. We should be encouraging women "returners" to get into ICTs and finally adopting mechanisms to retain women already in the sector.

The proportion of women working in ICT varies widely across the EU from 6% in Luxembourg to 41% in Lithuania [ITG08]. But those who enter ICT careers often drop out or move to a different career. Also, fewer women make it to senior management positions, particularly in the ICT sector. About 66% of telecommunications companies have no women on their board of directors.

The Commission is therefore trying to encourage more women graduates to take up a career in ICT industry, and to stimulate an interest amongst those taking their first career decisions whilst still at school [ITG08]. This will create a larger, more diverse and creative workforce. Efforts are underway to show women that ICT careers can be challenging, rewarding and fun, and to overcome negative images and stereotypes. However, it needs industry and other stakeholders' support.

The European Commission has launched a study to examine best practices throughout Europe, to learn from those who have been looking at this issue, and to spread and exchange good ideas and best practices. The results of this study are expected in next October. From VAN project, we will be taking a close look at next steps to be taken in this sense.

2 Women in ICT

Within this section we are aiming to provide evidence of gender imbalances identified inside ICT. The data indicate that women are significantly under-represented in the **business enterprise sector** where the EU's R&D is mostly intensive. A similar situation is noticeable in senior **academic** positions where future professionals are educated. Similarly, women are under represented in **decision-making positions** where science and technology strategies are set and ICT policies are developed.

2.1 Tertiary education

According to the PISA 2006 Study, women show similar preferences and competence to those of their male colleagues in science and technology subjects at the age of 15. However, a large majority of women choose a professional career in sectors of activity different to ICT. The decision of women to pursue other education and professional paths can be attributed to several social, economic and personal factors.

In most countries, women with a tertiary education level outnumber male graduates with respect to the whole reference population. This is especially true for ages comprised between 25 and 64. Exceptions to this are Liechtenstein and Turkey, where men outnumber women irrespective of the age.

Although at tertiary education level there is a general increase trend among highly educated females, in specific sectors, such as **computing** (Figure 2.1) and **engineering and engineering trades** (Figure 2.2), male graduates significantly outnumber females.

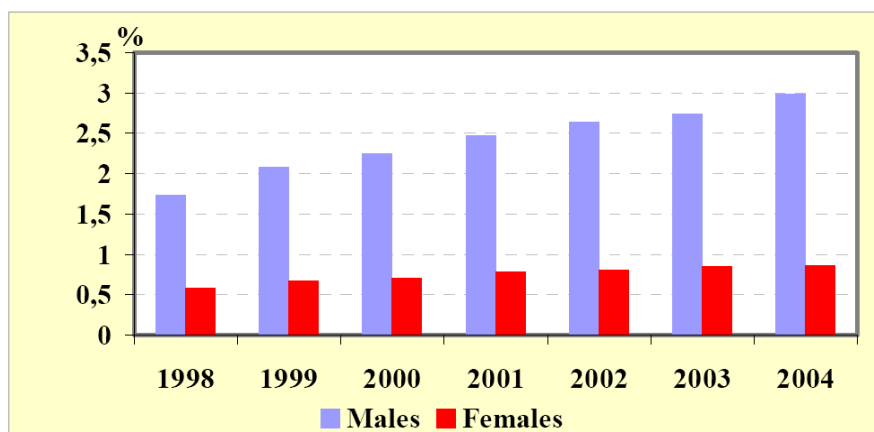


Figure 2.1 Percentage of male and female computer science graduates (ISCED 5/6) as a proportion of all graduates, 2007
(Source: EU-RA from Eurostat)

In the EU-27, the proportion of male and female **engineering and engineering trades** graduates as a percentage of all higher education graduates increased in the period 1998 to 2004 (Figure 2.2). The increase was greater for males (2.3%) than for females (0.3%). From 1998 to 2004, the gap between males and females increased by 1% reaching 5.5%.

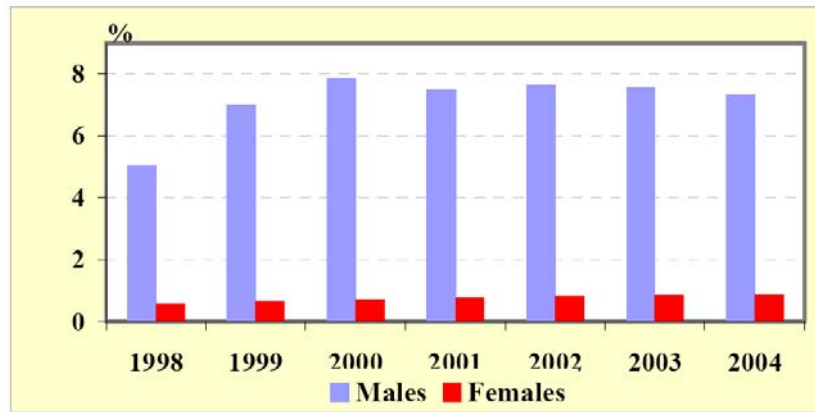
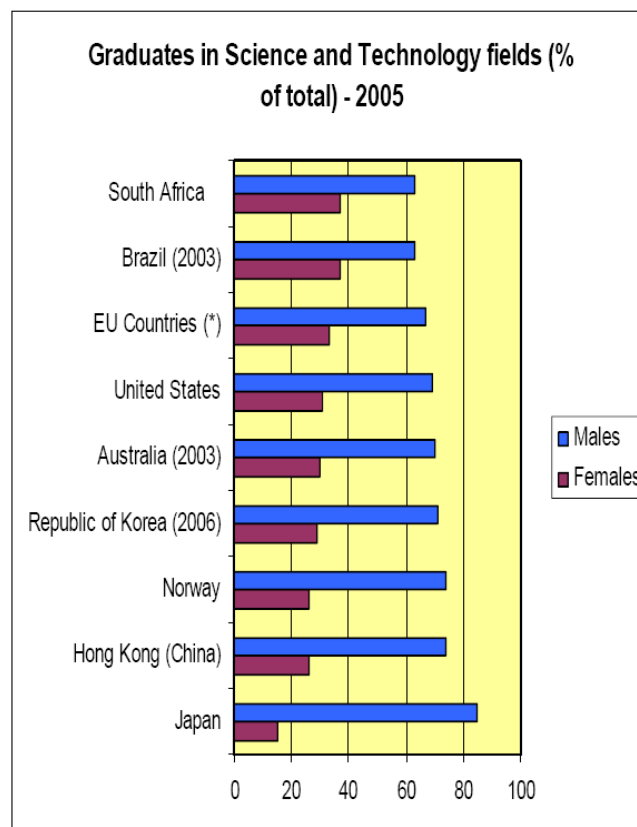


Figure 2.2 Percentage of male and female engineering and engineering graduates (ISCED 5/6) as a proportion of all graduates, 2007 (Source: EU-RA from Eurostat)

The average percentage of female graduates in the **science and technology field** in Europe (33%) is the third at global level, with South Africa (37%) and Brazil (37%) in the lead (Figure 2.3). In the United States (31%), Australia (30%), Norway (26%) and Japan (15%) the percentage of female tertiary graduates in science and technology is situated below the European average.



(* Except Hungary and Luxembourg)

Figure 2.3 Percentage of tertiary graduates in the field of engineering and engineering trades broken down by sex, 2005 (Source: UNESCO)

While in general the graduation rates of females equal or exceed those of males in most OECD countries, women are still under represented in advanced research programmes. According to OECD statistics [OECD Science, Technology and Industry Scoreboard 2007. Innovation and performance in the global economy], women are less likely to graduate at doctoral level except in Portugal, Italy and

Iceland; in Japan and Korea, women receive less than a quarter of all doctorates awarded. They are even less likely to obtain degrees in science and engineering. Women account on average for more than two thirds of OECD degrees in the humanities, arts, education, health and welfare, but for less than one-third in mathematics and computer science, and less than one quarter in engineering. Around 80% of science and engineering university degrees in Japan, the Netherlands and Switzerland are awarded to men.

Certain fields are largely male dominated. In the EU, this applies to 'science'¹, mathematics and computing' (almost two-thirds of enrolments are men) and above all 'construction' (over three-quarters). This majority is apparent in all countries, except in the field of 'science'. Bulgaria, Italy, and Portugal achieve a balanced participation of men and women in 'science, mathematics and computing', while in Romania women outnumber men in this field.

2.2 R&D Personnel

The EU goals in Research and Development, as set by the Lisbon summit strategy, are to reach by 2010 at least 3% R&D intensity in the EU, and to have two thirds of R&D expenditure financed by the business enterprise sector.

In 2004, 1.49% of the total EU-25's employment was R&D personnel. At the national level, the highest shares of R&D personnel in total employment were observed in Finland (3.24%) followed by Sweden and Iceland with both 2.51%².

Research appears to be still a predominantly male domain. The share of women among researchers (18%) was lowest in the business enterprise sector (BES). By contrast, in the governmental (GOV) and high education sector (HES) approximately one researcher in three was a woman.

The low share of women researchers is partly a reflection of the uneven distribution of women among the various sectors of R&D activity. With the exception of Denmark, South Korea, Luxembourg and the Russian Federation, women researchers work mainly in the higher education sector (HES) (Figure 2.4); their participation is particularly low in the business enterprise sector (BES) (Figure 2.5).

The same discrepancy is revealed when examining the proportion of female researchers in the Government Sector segregated by field of activity (Figure 2.6)³. The largest gap between male and female researchers in Europe is present in the engineering and technology fields (22.3% women) whereas the proportion of women (50.4%) slightly exceeds that of men in humanities research (Figure 2.6).

Women are under represented also in research activities in engineering and technology in the Governmental sector. In Malta, according to the latest available data, all the researchers working in the government sector in engineering and technology are men.

In conclusion, women are significantly under represented in RTD activities across the government sector, in the higher education sector as well as in the business enterprise sector. Across the various activity sectors, the discrepancy is most significant in engineering and technology research. In Europe, the least women work as researchers in the government sector in engineering and technology in Malta and the most in Romania.

¹ The International Standard Classification of Education (ISCED-97) includes also natural sciences, medical sciences, agricultural sciences, social sciences in the broad definition of the Science field.

² Science, Technology and Innovation in Europe, EUROSTAT 2007.

³ According to the latest data available, published by DG RTD in 2006 "Women and Science. Statistics and Indicators"

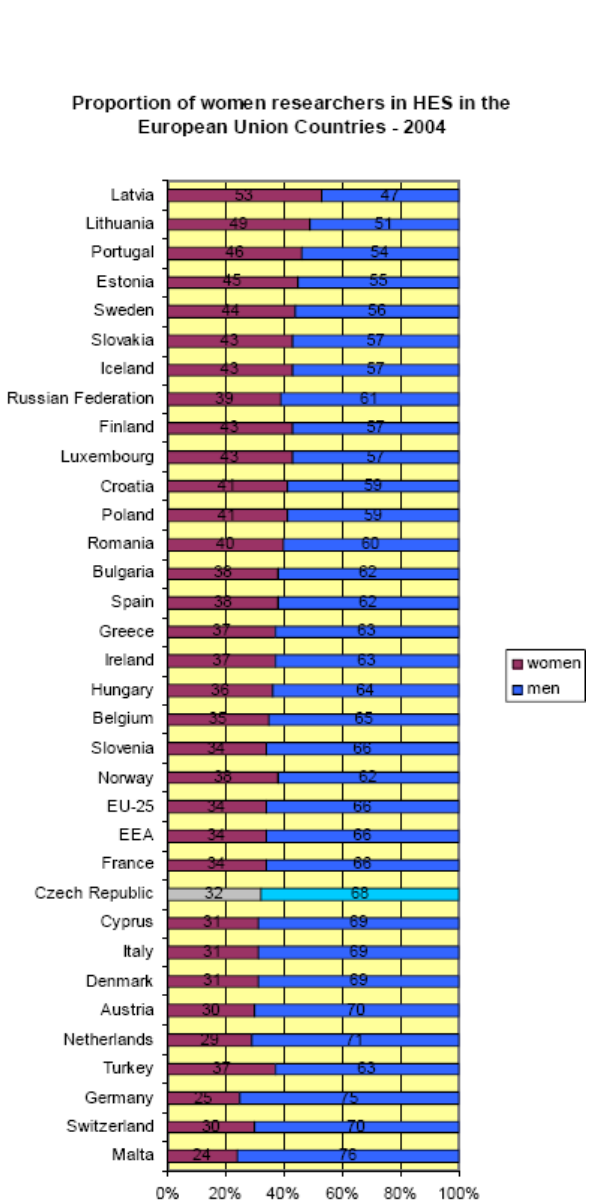


Figure 2.4 Percentage of women researchers in the higher education sector in EU 24 (Source: Eurostat)

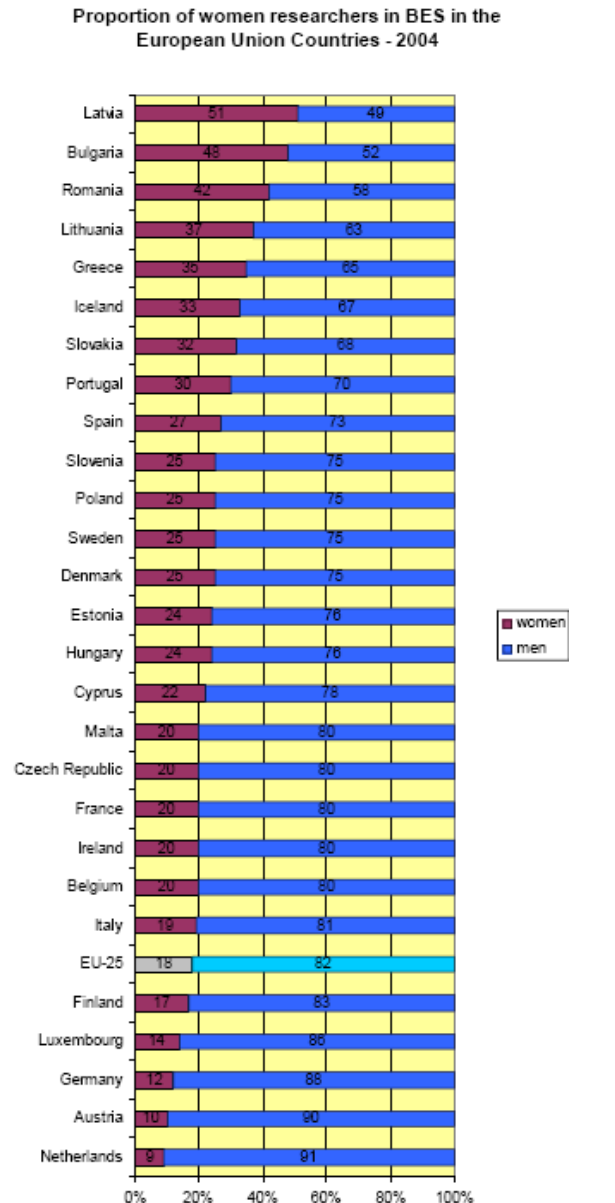


Figure 2.5 Percentage of women researchers in the business enterprise sector in EU (Source: Eurostat)

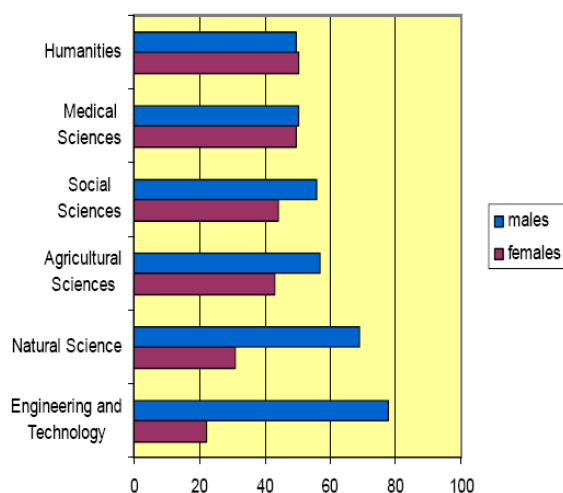


Figure 2.6 Percentage of female researchers in the Government sector by field of science in EU-25 (2003) (Source: She Figures 2006)

2.3 Labour force

The discrepancy between the number of male and female tertiary graduates in engineering and computer sciences is also reflected in the gender distribution of the labour force in the ICT and ICT related fields. The number of female graduates in the engineering and computing fields constrains the number of women that will be present in the ICT labour force. Other factors also influence the gender distribution of the labour force in engineering and computing by diminishing the number of women in the sectors of activity. The higher proportion of women inactive in the labour force due to family responsibility, imbalances in remuneration between men and women and the limited presence of women in decision making and managerial positions are the most relevant.

Since 1999 the share of the inactive⁴ people in the labour force as a percentage of the total population aged 15 to 64 has dropped from 31.6% to 29.4% in the EU-25. Almost all the decrease is due to the increased participation of women.

However, across the sectors, the inactivity rate of women aged between 25 and 54 years in the labour force was 23.6% in 2006 in the EU27, compared with 8.1% for men (Figure 2.7). In addition to being the most intense working age, this is the age when families are founded and children are raised. The main single reason for prime-aged women to be outside the labour force seems to be family responsibilities.

⁴ A person is inactive, according to EUROSTAT when, despite being able to work is neither employed, nor looking for work. Instead, he/she prefers for example to stay at home and care for children or elderly family members.

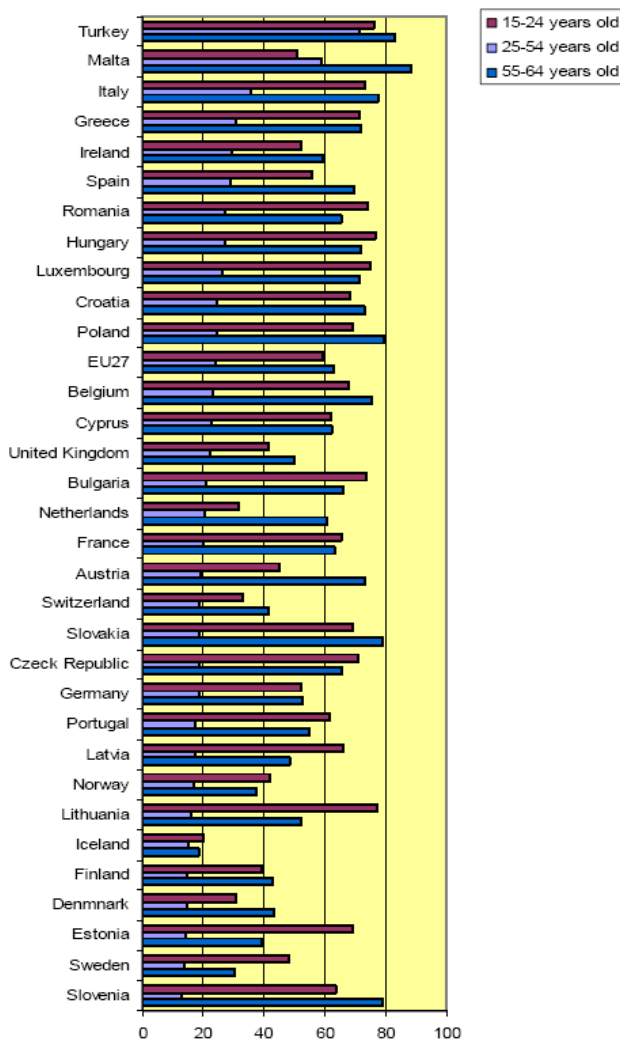


Figure 2.7 Inactivity rates of Women in %, 2006 by age (Source: Eurostat)

When it comes to remuneration, in 2005 there were 6.6 million employed persons (or 3.4% of total employment) 33 working in the EU-25 in high-tech knowledge-intensive services (KIS), which include post and telecommunications, computer and related activities, and research and development. High-tech manufacturing, which includes manufacture of computers, communication equipment and medical equipment, accounted for 1.1% of EU-25 total employment in 2005 (2.2 million persons employed).

Women were, in general, under-represented in high-tech manufacturing (Figure 2.8) and in high-tech KIS sectors in 2005 (Figure 2.9). However, the proportion of women employed in these sectors was higher in the new EU Member States, such as Lithuania (51.8% women in high tech manufacturing and 53.8% women in high tech KIS) and Hungary (52.5% women in high tech manufacturing and 40.5% women in high tech KIS). The lowest percentage of women working in high-tech manufacturing was in Netherlands (26%), Finland (28.4%) and Sweden (29.8%). The lowest percentage of women in the high tech knowledge intensive sectors was in UK (24.6%), the Netherlands (25.5%) and Austria (28.1%).

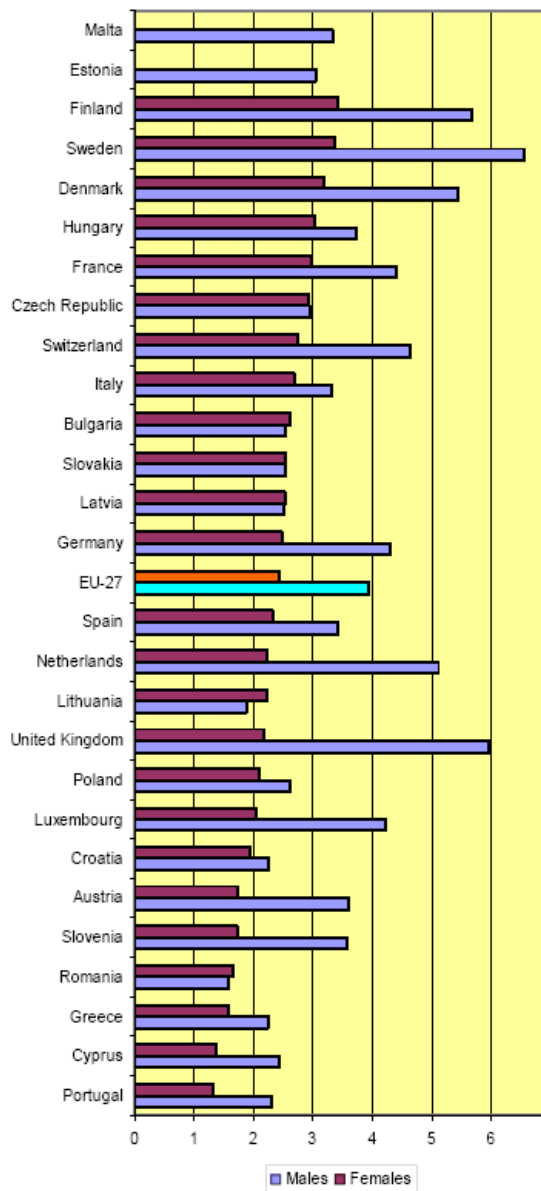


Figure 2.8 Share of women in total employment in high-tech manufacturing EU-27 –2006 (Source: EUROSTAT)

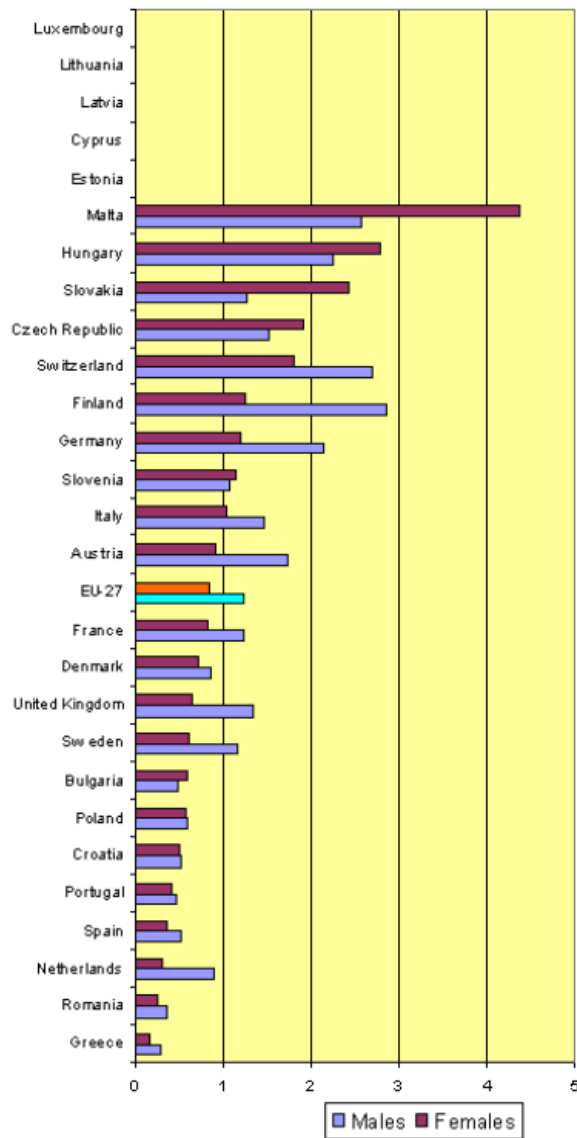


Figure 2.9 Share of women in total employment in high-tech KIS sector EU-27— 2006 (Source: EUROSTAT)

Finally, the gender imbalance between men and women in decision making positions is illustrated by the gender distributions of managerial positions (Figure 2.10)⁵. On average only 30% women work in European enterprises as managers. Latvia (44%), Lithuania (43%) and France (38%) have the highest percentage of women in managerial positions while Denmark (23%), Malta (14%), and Cyprus (14%) have the lowest ones.

5 Managers are persons classified as Directors and chief executives, Production and operating managers, Other specialist managers and Managers of small enterprises (ISCO (International Standard Classification of Occupations) category 12 and 13). According to EUROSTAT , Labour Force Survey (LFS)

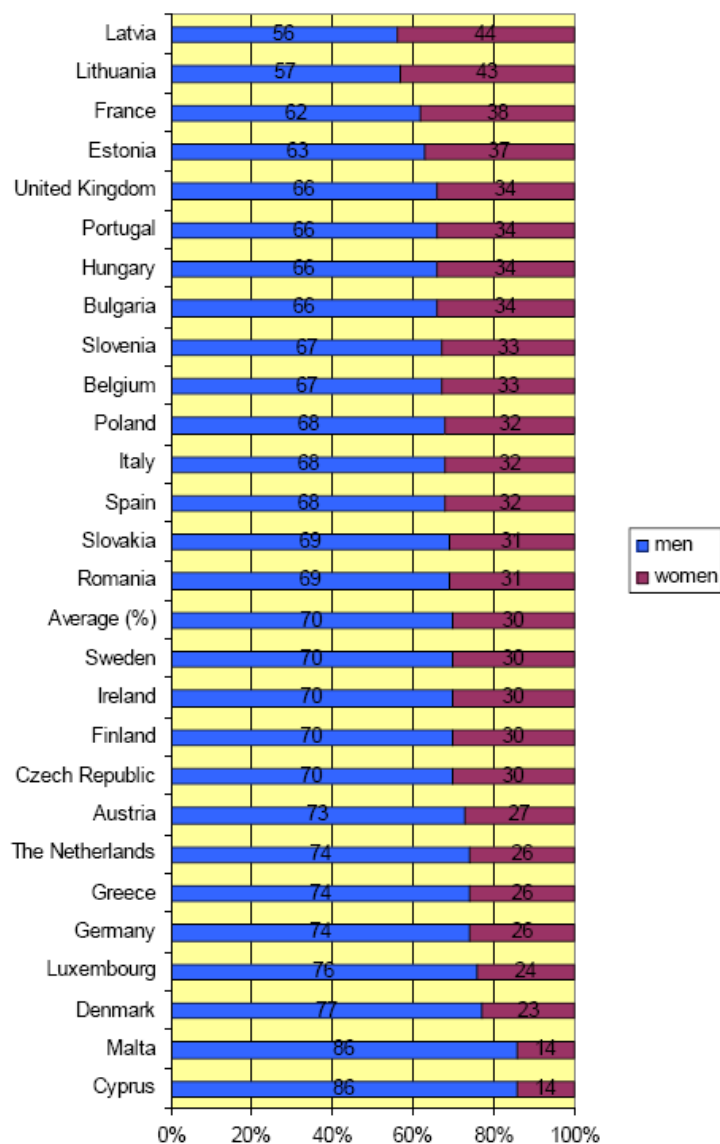


Figure 2.10 Proportion of women and men in managerial positions (2005) (Source: EURID)

3 Analysis on data collected from VAN partners

Assessment on women participation inside VAN project has been fulfilled following the usual procedure from past years (check annex from D10.3-2 V1 to see the related questionnaire). The Gender Action Plan structure is described in the Technical Annex of VAN project.

Related information on distribution of men and women according to their function inside the project has been updated and is shown in the next sections

3.1 Workforce statistics

Figures 3.1 and 3.2 show the display of women and men regarding their function inside VAN project.

The overall participation of women reaches 16,4% (a bit higher than last year, which was 13,5%). Tables 3.1 and 3.2 show the same information considering the evolution from last year. Actual figures and percentages are shown too.

To begin with, it should be noted that the participation of men has decreased more than that of women. This is the reason why women participation in terms of percentage is now higher, though there are just 3 more women in the project.

Changes for women do not affect top positions. In fact, there's one additional early researcher and 2 more under the generic classification of "Others". Regarding men, there's an additional team leader, but we have lost 7 researchers. In total, male participation has decreased in 10 with respect to last year.

Display of women in the project according to the function

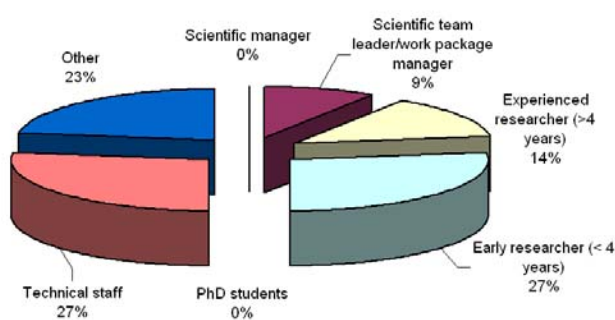


Figure. 3.1 Display of women

Display of men in the project according to the function

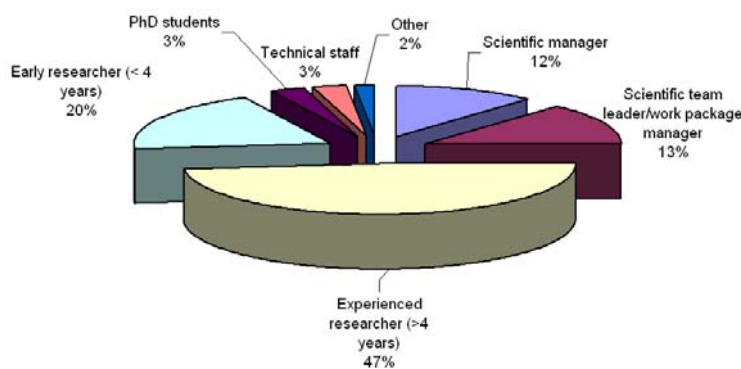


Figure. 3.2 Display of men

	Women (Year 2007)	Women (Year 2008)	Men (Year 2007)	Men (Year 2008)
Scientific manager	0	0	13	13
Scientific team leader/work package manager	2	2	14	15
Experienced researcher (> 4 years)	3	3	59	54
Early researcher (< 4 years)	5	6	24	22
PhD students	0	0	3	3
Technical staff	6	6	4	3
Others	3	5	5	2
Total	19 (13,5%)	22 (16,4%)	122 (86,5%)	112 (83,6%)

Table 3.1 Evolution from last year in actual figures

	Women (Year 2007)	Women (Year 2008)	Men (Year 2007)	Men (Year 2008)
Scientific manager	0%	0%	11%	12%
Scientific team leader/work package manager	11%	9%	11%	13%
Experienced researcher (> 4 years)	16%	14%	49%	47%
Early researcher (< 4 years)	26%	27%	20%	20%
PhD students	0%	0%	2%	3%
Technical staff	31%	27%	3%	3%
Others	16%	23%	4%	2%

Table 3.2 Evolution from last year in percentage

When directly comparing the number of men and women within each category, we get the results shown in figure 3.3.

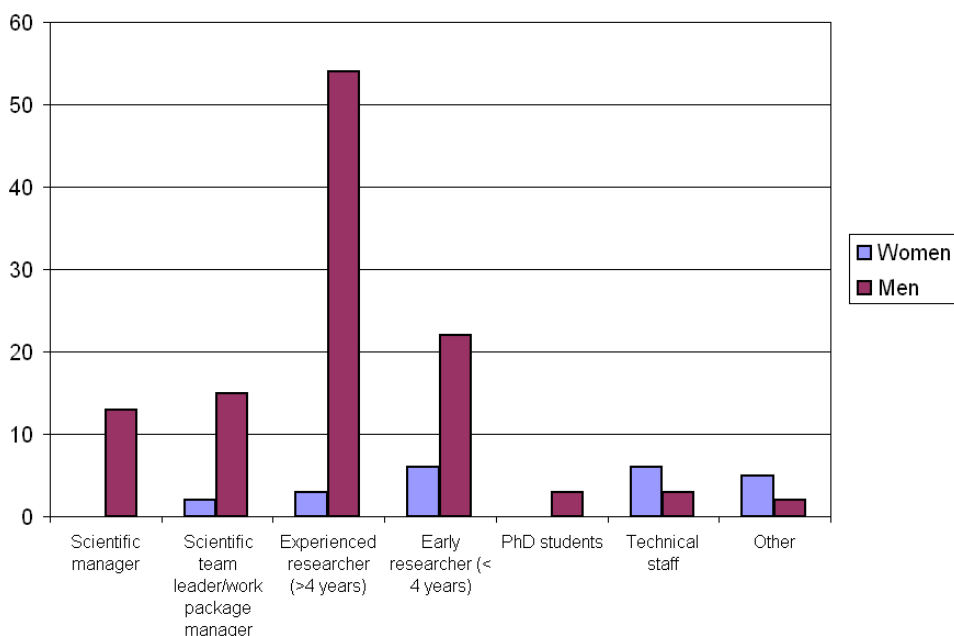


Figure 3.3 Comparison between women and men according to the different categories.

3.2 Taking special action to bring more women into the project

3.2.1 Recruitment

Merit-based open recruitments are commonly applied among VAN partners. Moreover, men and women usually have the same opportunities. That is, the recruitment process is carried out without any gender consideration. However, there are some special cases worth to be mentioned.

For **Siemens AG**, coordinator of the project, merits and skills are even the most important trigger for the recruitment of staff. In case of two people having the same merits and skills for a job, women and disabled people are preferred.

For **Otto von Guericke University of Magdeburg**, the application of merit-based open recruitment is the basis of employment. This is particularly accentuated through the woman promoting law in Saxony-Anhalt

Forschungszentrum Karlsruhe GmbH encourages women to apply in all job announcements and in case of same qualification, women are preferred.

Phoenix Contact Electronics GmbH is open to engage men as well as women in qualified positions. The company puts high emphasis on actions to keep men / women in business and 34% of the staff at the headquarters is female. Women are employed as engineers, product and sales managers, as well as other management functions. Further on, women are employed as skilled workers and office assistants.

37,7% of staff in **CARTIF** are women. Though no specific measures are taken to encourage women to apply for posts inside the organization, both women and men share the same opportunities and get equivalent posts.

Fidia S.p.A. applies procedures based on previous working experience or academic record (for people with no previous job experience) and, most important, the result of aptitude tests.

Politecnico di Milano applies public open contests.

Brno University of Technology, most often researchers grow from PhD students. PhD students are engaged based on detailed pre-knowledge of the PhD tutor regarding the student's scientific orientation. Therefore, those applicants for PhD studies are engaged who best fit a certain research group.

For **Institut fuer Automation und Kommunikation e.V. Magdeburg**, merits and skills are the trigger for the recruitment of staff, irrespective of gender.

3.2.2 Promotions

Promotions on both men and women are performed differently by VAN partners. Some of them carry out staff review systems, though this is not the general rule.

Siemens AG, once a year board and group managers of the unit SIMATIC NET meet with the personnel department to talk about salaries, promotions and special career advancements. There, women and men are dealt with simultaneously and equally.

Schneider Electric GmbH, carries out yearly staff review with decisions for promotions.

Fidia S.p.A and **CARTIF**, the team manager makes recommendations on promotions and then the company manager is the one to take the final decision.

Forschungszentrum Karlsruhe GmbH, The institutes of the FZK perform staff reviews in order to support the education from new personnel to leader positions in the organisation.

Italian partners (**Machining Centers Manufacturing S.P.A** and **Politecnico di Milano**) apply Italian law concerning promotions on staff.

Institut fuer Automation und Kommunikation e.V. Magdeburg applies yearly staff reviews with discussion on both sides establishing targets. Whenever considered relevant, there are promotion opportunities.

3.3 Promoting an attractive work environment

Most partners give maternity and paternity leaves, usually applying national law.

Maternity and paternity leaves related policies are integrated in the German law (Bundeserziehungsgeldgesetz (BErzG)). There's a law called "Bundeselterngeld- und Elternzeitgesetzes (BEEG)" according to which it is possible for both parents to take a paternity leave for a maximum of three years. This can be divided among the parents individually. Until the 12th month this leave is paid. After that, it's unpaid, but with the right of reemployment. There exists also a special maternity leave from six weeks before to eight weeks after the birth, especially for the mother, according to the German "Mutterschutzgesetz" - MuSchG.

As regards child care facilities, only **Politecnico di Milano** and **Forschungszentrum Karlsruhe GmbH** have them.

Concerning emergency leaves for caring for sick family members, about 50% of the partners apply this measure. National laws are also applied. In this sense, German law (5. Sozialgesetzbuch (SGB V) and BAT-O resp. MTArb-O) establishes 20 work days per year for each child. It is a specific labour agreement for public employees.

Otto von Guericke University of Magdeburg. Kindergartens are placed in the surroundings of the university. Additionally, a diaper-changing room has been opened at the medical faculty. Furthermore, the university cooperates with the local flat building cooperative "Otto-von-Guericke", in a way that studying parents can rent flats with a special discount. The working group for job and family currently leads a study about studying with a child and they discuss about the possibilities to open an own university-kindergarten. According to the law, to assist children (Kinderförderungsgesetz - KiFöG) of Saxony-Anhalt, every child up to its seventh year has the right for a full-time or part-time children attendance, according to the needs of the family.

Regarding emergency leaves for sick family members, German law is applied in the first place, but also an unpaid vacation is possible if needed.

The University of Magdeburg got a certificate of an audit for a family friendly college from the Hertie foundation. There are baby change rooms available with appropriate fitments.

CARTIF doesn't have child care facilities of its own, but there is a nursery in Boecillo Technology Park, where CARTIF is located. There are people from this organization currently taking advantage of this service. Current Spanish law allows fathers to enjoy a fifteen days paternity leave, as well as economic aids.

Phoenix Contact Electronics GmbH puts high emphasis on actions to keep men / women in business and to install measures to have a work-life- and business-family-balance.

Aucoteam, individual agreements can be reached for subsidised child-care costs and emergency leave for caring for sick family, if necessary. An alternative is the development of real good project team structures.

Institut fuer Automation und Kommunikation e.V. Magdeburg has no need of own child care facilities since the communities offer sufficient ones. Child care costs are subsidised by the German state.

Forschungszentrum Karlsruhe GmbH, there are day care facilities for children from 2 months up to 6 years. There is a possibility of doing flexible work time or half time jobs.

3.4 Flexible work schedules

Concerning the possibility of applying tele-working, tele-conference or video-conference, most of the partners enjoy these possibilities and others, but for some of them it is only possible in special situations and not entire tele-working places.

Siemens AG gives their staff the possibility of using as well remote access via WLAN, UMTS, GPRS etc. to the company network.

Phoenix Contact Electronics GmbH has totally flexible work schedules installed since 2000. Teleworking and part-time-working have been in action for the last years.

AUCOTEAM GmbH and **Forschungszentrum Karlsruhe GmbH** apply flexible work time models.

For **Institut fuer Automation und Kommunikation e.V. Magdeburg**, teleworking is possible under special circumstances. Within the flexible work schedule it is strived to keep the daily core working time from 9am to 3pm if possible. Teleconferences are possible and remote e-mail and network server access is applied for every employee.

3.5 Linking with networks of women scientists in the field of the project

This practice is not usual among VAN partners so far.

In **Otto von Guericke University of Magdeburg**, within the VAN project there are no special networks established for women, but within the faculty and university there are several programmes for the motivation of young women to take jobs in science. Furthermore, there are programmes founded by the local public service to support women achieving a PhD with a scholarship.

<http://www.sachsen-anhalt.de/LPSA/index.php?id=3623>

<http://www.double-step.de/>

3.6 Linking with schools and universities to trigger the interest of women in the project

Siemens AG. There is a special person who is responsible for contacts with schools and universities, also taking care of this issue.

AUCOTEAM GmbH has frequent contacts with local universities, like FHTW Berlin (University of Applied Sciences) and TFH Berlin (University of Applied Sciences) and is going to trigger the interest of students to join the VAN project team.

Otto von Guericke University of Magdeburg. Each year there is a children lecturer day held for pre school children. There is a special open door day each year for pupils where women interests are considered. In lectures the interest of women are especially encouraged, especially to apply for diploma, praktica and student jobs which this organization offers.

CARTIF, as a research centre, has a strong relationship with Valladolid University, though there aren't special measures to specifically trigger the interest of women over men. Both are treated equally.

Forschungszentrum Karlsruhe GmbH has links with schools and universities already established, working towards triggering the interest of women.

Phoenix Contact Electronics GmbH. In order to get more female apprentices and female engineers, as well as to encourage young women to study engineering sciences, a special event by Phoenix Contact was installed in 2004 and takes place regularly every year: "Womenpower 2004/2005/2006". It is an information event open for pupils, students, young women, as well as parents and teachers to get a live impression how fascinating the world of electrotechnique and automation is.

Institut fuer Automation und Kommunikation e.V. Magdeburg, there is a close link to the university of Magdeburg. Many male and female employees start as student apprentice or write their diploma thesis at the Institute. Also pupils use the opportunity to make a practical training. Furthermore, they have also done and fostered guided visits at their Institute of e.g. kindergarten groups (boys and girls) to wake up interest for automation related topics. Also, they are actively participating in public events as e.g. the scientific year or scientific night of Magdeburg.

4 Conclusions

The general trend regarding female participation inside VAN project is similar to that of last year.

The present study leads us to the following conclusions:

- The proportion of women has increased a bit (from 13,5% to 16,4%). This is explained mainly by a decrease in male participation, more than a significative female increase.
- Merit-based open recruitments are widely used through the consortium. This means that men and women generally are given the same opportunities when applying for a post. Though this is a fair practice, women are not preferred over men.
- Promotions on both men and women are performed differently by VAN partners, sometimes by means of staff review systems. Women are not treated differently in this sense.
- Maternity / paternity leaves are given by most partners, usually applying national law. As regards child care facilities, just two partners (Politecnico di Milano and Forschungszentrum Karlsruhe GmbH) have some of their own, though most of the rest profit from some kind of installation placed in the surroundings. Emergency leaves for caring for sick family members are given to their staff by around 50% of the partners.
- Flexible work schedules are commonly used among VAN partners. Tele-working, tele-conferences or video-conferences are available for most of them, though only for specific situations in general, and not entire tele-working places.
- Currently there are not links with networks of women scientists in the field of the project, but some partners have links with schools and universities with the aim of triggering the interest of women in the project.
- Several partners have links with schools and universities to trigger the interest of women in the project. This is more common among the research and university related ones, though not exclusively.
- Despite the increase in the percentage of women in employment between 1999 and 2003, the gender differences in the ICT professions are so persistent that they will most likely not self-correct in the foreseeable future.

Glossary

BES	Business Enterprise Sector
EU	European Union
GOV	Government
HES	High Education Sector
ICT	Information and Communication Technologies
KIS	Knowledge-intensive services
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
R&D	Research and Development
RTD	Research and Technological Development
VAN	Virtual Automation Networks

References

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