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*Report on the Gender Action Plan*

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**Abstract**

This document reports on the Gender Issues Plan within the ACE Network of Excellence

**Keyword List**

Gender Issues

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## 1. Introduction

ACE agrees with the official position of the EU, and states that the lack of women in science and engineering is a problem from different points of view:

- **Equity:** gender discrimination is a violation of human rights;
- **Excellence:** the under-representation of women threatens excellence, as 50% of the potential of the population would be discarded;
- **Efficacy:** the ageing population makes it essential to target both genders;
- **Efficiency:** it is a waste of resources to educate and train young women scientists and engineers, but then not to use their skills in employment.

Therefore, the efforts should be centred not only in recruiting women for technical studies, but also in maintaining and fostering their career opportunities, by helping people of both genders to balance family and work.

Gender equality is to be understood along three dimensions that are seen to characterise the relationship between the issues of gender and science. The three dimensions were referred to, in the 1999 Communication, as **by**, **for** and **about**, recognising that:

- 1.1. Women's participation in research must be encouraged: *research by women*;
- 1.2. Research must address women's needs: *research for women*;
- 1.3. Research must be carried out on the gender question itself: *research about women*.

In ACE, the work has been focussed on addressing the first point in a proactive manner, whereas supporting the two other dimensions. In this sense, establishing equal opportunities for both genres is a strategic objective of the ACE Network of Excellence.

## **1.1. Research by women**

The unbalanced current situation, with a low percentage of female involved in antenna engineering activities has to be analysed, not only within ACE but at a global level, in order to suggest possible actions to foster gender equality.

In particular, the selection of researchers needed to implement ACE JPA Activities (or future additional researchers) tried to aim at decreasing the existing inequality in gender participation by fostering female participation in ACE research and dissemination activities.

The general statement must be made here that the ACE participants were encouraged adopt equal opportunity for women and men policies, specifically encouraging women to participate as researchers in the different areas of identified within the technical scope of ACE, as well as in steering roles:

- 2 out of 13 of the members of the executive board are women (15,4%)
- 1 out of 9 activities is lead by women (12,5%)
- 4 out of 32 Workpackages are lead by women (12,1%)
- 51 out of 404 researches are women (12,6%)

Besides contributing in a positive way to the statistics, this also shapes the project in a very specific direction with regard to how the second dimension is tackled within ACE.

## **1.2. Research for women**

Within the ACE Network, sex and gender have a minor relation with the objectives and the methodology of the project, since the Antenna research is focused to enable applications (mainly communications) equally directed and usable by both genders.

Yet, although the subject of ACE presents no specific gender oriented topic, some of the antenna applications envisaged within ACE have applications that relate directly to women's life, and specifically to women's health issues. For example:

- The study of UWB antennas can have a good repercussion in the early detection of breast tumours.
- The development of small antennas can lead to improved security for women and elderly people, as they can be integrated in devices such as safety phones or location devices.

### **1.3. Research about women**

The **Gender Watch System** is one of the Commission's tools for improving the integration of the gender dimension within research. Among others, the Gender Watch System is responsible for collecting sex-disaggregated data and for conducting gender impact assessment studies.

ACE would like to support the Gender Watch System by providing the relevant data. At Project management level as well as at WP management level, data will be collected as to the actual participation of women in the activities, indicating the specific areas of work.

## 2. ACE Gender Action Plan

Along the duration of the Network the ACE Gender plan included the following measures:

- Women were encouraged to participate to the network activities
- Access was given to links to activities related to women scientists groups in the Antenna research area (for example, IEEE Women In Engineering)
- Schools and Universities were encouraged to promote women involvement in Antenna research
- A member of the Executive Board was designated to survey/monitor/review the gender equality

### 2.1. Quantitative statistics

In selecting ACE participants, equal evaluation for candidates of both genders was adopted. Nevertheless, the majority of the researchers involved in the ACE Network of Excellence is composed by men, with a minor percentage of women (12.6%, see Figure 1). This distribution of male and female researches within ACE reflects the distribution of in the participant institutions, which in turn mirrors the situation of gender distribution in European Engineering research.

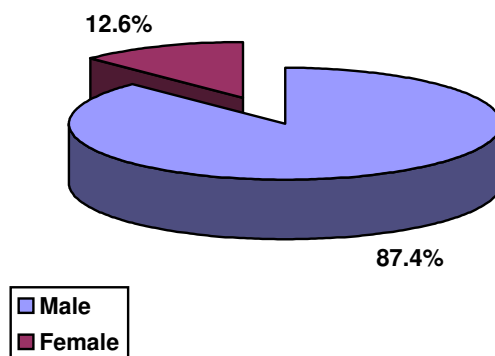


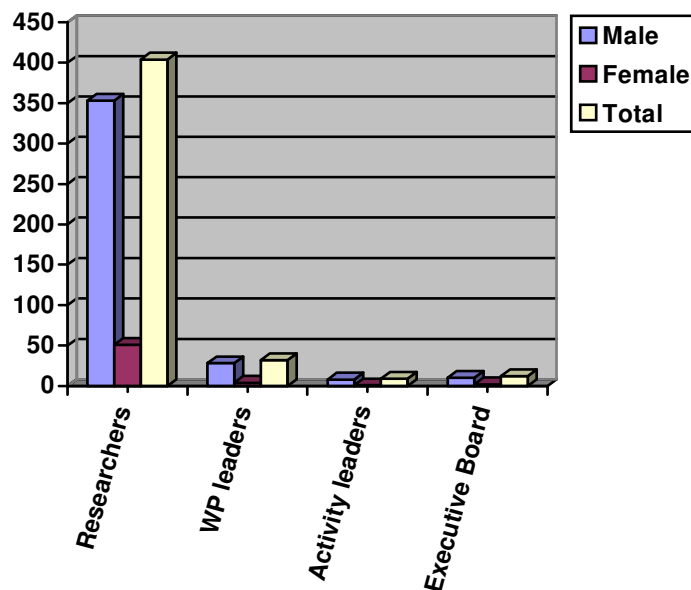
Figure 1: Percentage of male and female participants within ACE.

## ACE participants

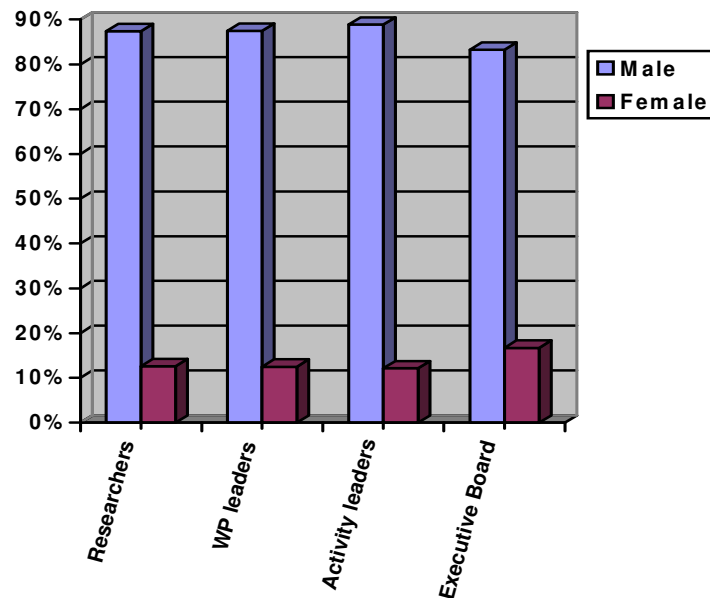
The percentage of women remains almost constant in the different levels of participation (Participants, Workpackage Leader, Activity Leader and Member of the Executive Board), as shown in Table 1, Figure 2 and Figure 3. It can be observed that the percentage of women is maintained in the three first categories, whereas it is slightly increased in the Executive board, in which the involvement of women is much larger than in other projects of the same field.

**Table 1: Proportion of male and female participants within ACE.**

	Male	(%)	Female	(%)	Total
<b>Participants (total)</b>	353	87.4	51	12.6	404
<b>WP leaders</b>	28	87.5	4	12.5	32
<b>Activity Leaders</b>	8	88.9	1	12.1	9
<b>Executive Board</b>	10	83.33	2	16.67	12



**Figure 2: Number of participants at the different levels of ACE.**



**Figure 3: Percentage of male and female members at the different levels of ACE.**

As stated, the distribution of male and female participants reflects the actual situation of European research, namely:

- Female participation is higher in public research than in industrial research,
- The proportion of women is larger in life sciences and chemistry (49%), and lowest in mathematics, physics or engineering (only 8%).

In this case, the percentage of women in ACE is above the average in physics and engineering, but still shows the proportion shown in the "gender scissors" displayed in Figure 4. It illustrates how, although women are a majority at the beginning of higher education, their proportion diminishes as the career advances.

This is a problem to be dealt with not only within ACE, but also from a much earlier stage: women are underrepresented at the scientific top, despite the fact that more than half of the European student population is female. In the case of engineering sciences, this problem starts even earlier, as women are underrepresented even at the beginning of their studies, as shown in Figure 5.



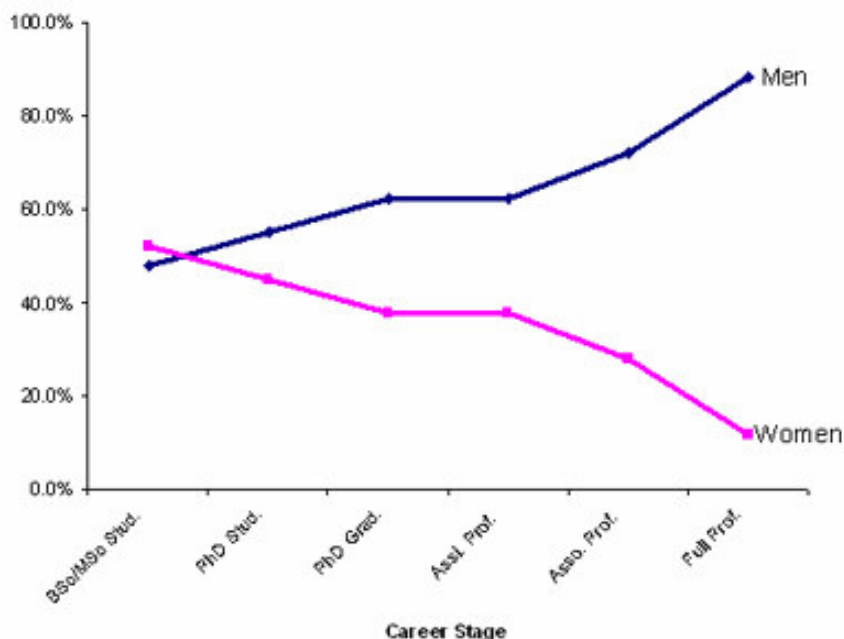


Figure 4: The Gender Scissors (source: Third European Report on Science and Technology, 2003, [http://www.dife.de/~mristow/2003EU\\_3rd\\_report.pdf](http://www.dife.de/~mristow/2003EU_3rd_report.pdf))

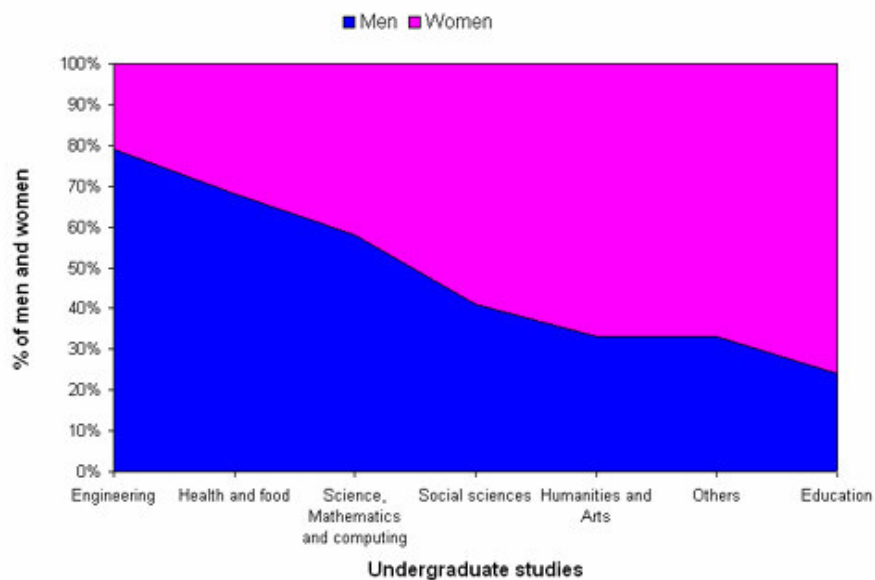


Figure 5: Proportion of male and female students in undergraduate studies (Source: 3rd European Report on S&T indicators 2003, [http://www.dife.de/~mristow/2003EU\\_3rd\\_report.pdf](http://www.dife.de/~mristow/2003EU_3rd_report.pdf))

It is the belief from ACE that this problem must be addressed at a much earlier stage, in schools and even within families, not to discourage young girls to undertake technical studies. Some efforts have been dedicated within ACE to bring antenna engineering to the schools, and encourage both boys and girls equally to pursue this studies, as shown in Figure 6.



**Figure 6: Demonstration of electromagnetics and antennas in primary school.**

### **European School of Antennas**

The participation in the courses of the **European School of Antennas** was also analysed. The results presented in Table 2 and Figure 7 to Figure 9 show how women are still a minority of the students. Nevertheless, the proportion is higher than in the case of ACE participants, which could indicate a trend towards increasing the presence of women in Engineering PhD studies.

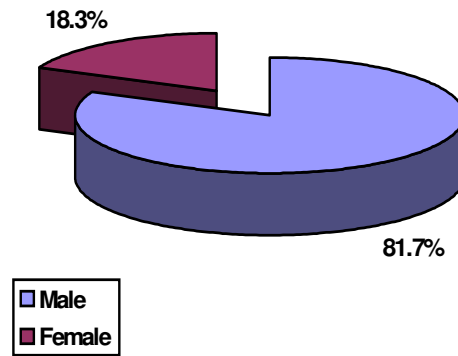


Figure 7: Mean distribution of participants in the European School of Antennas

Table 2: Participants in the courses of the European School of Antennas

	Male	(%)	Female	(%)	Total
High-frequency techniques and travelling wave antennas	25	73.5	9	26.5	34
Phased Arrays and Reflectarrays	23	85.2	4	14.8	27
Artificial EBG surfaces and metamaterials	21	96.5	1	4.5	22
Design and analysis of large reflector antennas and lens antennas	6	54.55	5	45.45	11
Microwave and millimetre wave antenna design	11	84.6	2	15.4	13
Antenna measurements at mm and submm. wavelengths	13	92.9	1	7.1	14
Compact Antennas	27	81.8	6	18.2	33
Antenna Measurements	20	83.3	4	16.7	24
Computational EM for antenna analysis	20	71.4	8	28.6	28
Antennas for new systems of mobile communications	19	82.6	4	17.4	23
MIMO Communication systems and antennas	20	90.9	2	9.1	22

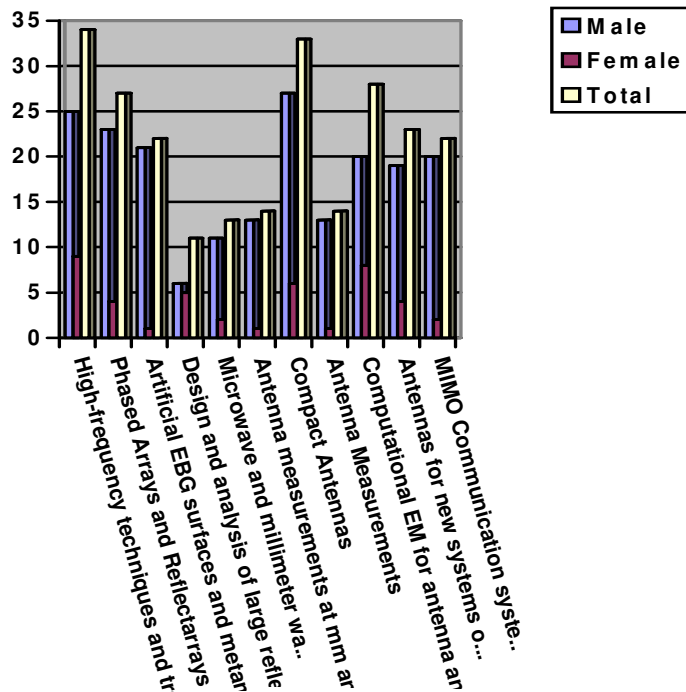


Figure 8: Distribution of participants in the courses of the European School of Antennas

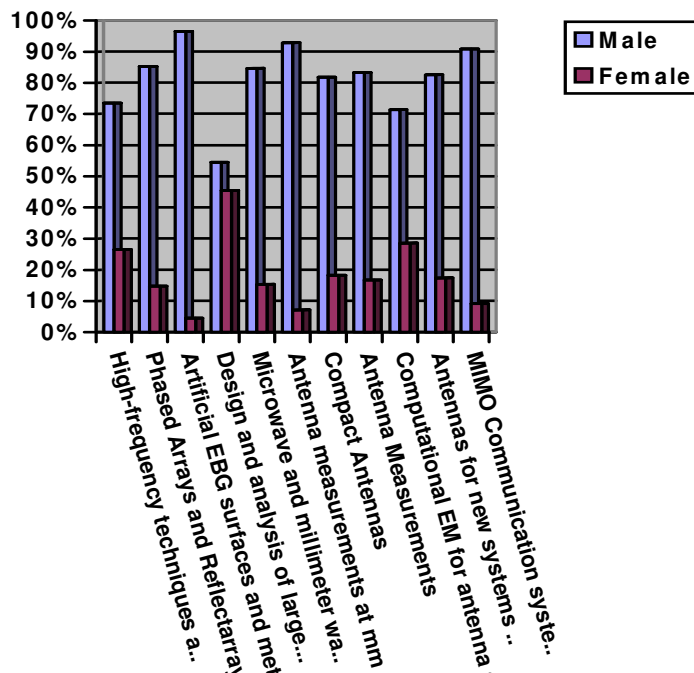


Figure 9: Percentage of male and female participants in the courses of the European School of Antennas

## **European Conference on Antennas and Propagation**

The upcoming **European Conference on Antennas and Propagation** (EuCAP) issued from the ACE efforts should be a platform to present the scientific production not only of ACE participants, but also of all the antenna community. Women scientists and engineers are encouraged to submit their work to be presented to a wide public.

Although no woman is yet directly involved in the organisation (Conference Chairs or Steering Committee), they will be strongly represented in the Technical Programme Committee (TPC).

## **2.2. Measures to improve work / life balance**

For a better compatibility of professional and private life, ACE wants to encourage all the participating institutions to follow the European recommendations for balancing work and family life.

The compatibility of leisure time, family and job should be a high priority for both female and male participants. Technical and scientific jobs often lead to the so-called "long hours culture", which can cause problems to women and some men, who have problems to combine them with their leisure and family time. Employers must encourage a good balance between work and home life for all employees. These should include policies that help those who wish to return to science careers after a break.

To be an attractive employer, ACE institutions should offer every employee or PhD student the possibility to organize his / her work in flexible terms. The part-time and teleworking models may also be implemented in some cases, as long as no laboratory work is needed.

Therefore, ACE suggests:

- To address the long-hours culture, by fostering flexible working hours, part-time work and, in some cases, the possibility of telework.
- Ensure that the participating institutions provide good parental leave arrangements and take into account problem of child and elder care.

- Encourage the participants to develop career-break schemes and policies to accommodate the needs of employees returning after a career break.
- Assess the problem of child care in the case of work travels and conferences
- Addressing the situation of careers for the woman returners.

In the case of women that have decided to take a career break, and want to return to a their previous position, it is important that they have access to training and development. The courses of the **European School of Antennas** could be an instrument in this direction.

### ***2.3. Gender representative***

To guarantee continuous monitoring and surveillance of gender aspects, the Executive Board of ACE designated a gender issues representative for the duration of the project. Her tasks included coordinating the networking with gender issues representatives from other projects, as well as engineering institutions.

### ***2.4. Networking***

In order to gather ideas for increasing women's participation in research activities, different institutions, such as the Women In Engineering (WIE) Association of IEEE have been examined and contacted. ACE had representatives in the WIE Events at the Antennas & Propagation Symposium in Monterey, California (2004) and Washington DC (2005).

ACE has also been in contact with the Gender Issues representative of the Metamorphose Network of Excellence, to compare experiences and exchange ideas.

### ***2.5. Gender in language use***

In order to raise awareness of gender issues in the everyday working context, ACE tried to pay attention to discriminatory use of language, also in dealings between members of research teams. This policy was also applied in the redaction of any document issued in the frame of ACE.

### **3. Conclusion**

This document summarises the gender situation within the ACE Network of Excellence, and the efforts that are made in order to improve the situation. The involvement of the different genders in the Network of Excellence is determined by the situation: in the pool of possible participants, men outnumber women in a proportion of about 10 to one. Although the participation of women in ACE is higher than in the average, the numbers are still to be increased.