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Database about gender aspects of EMMA2 human resources

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1 Scope of Document

This document shows a statistical presentation of the “Database about gender aspects of EMMA2 human resources”. The following introduction (chapter 2) is taken from the “Gender Impact Assessment of the specific programmes of the Fifth Framework Programme.” [1]. It will lead in a very clear way to the measured results of the gender aspects within EMMA2. In fact there is no significant change with regards to gender aspects between the 6th and the 5th Framework Programme which is definitely not caused by the Programme itself, but by our society, starting with a ‘traditional’ education: Changing the gender role has to start by changing the whole education process in our society. Projects like EMMA2 can only support the gender independent policy but cannot change the gender aspects from the bottom.

2 Introduction

Several studies reviewed the current state of knowledge of gender issues in their individual field. This led to some common elements in the conceptual discourse of their arguments. To give a common overview of the gender aspects in our society for the understanding of the complexity of this issue, the following introduction is collected and presented within a DG-TREN document [1]:

2.1 Definition of gender

A basic distinction is made between sex and gender. Sex refers to the biological differences between women and men. Gender is a socio-economic and cultural construct for differentiating between roles, responsibilities, constraints, opportunities and needs of women and men in a given context. Gender differences are the result of learned roles, which change over time and vary widely within and across cultures. Therefore, gender is not fixed within time or space, and it not only evolves in response to other social, cultural, economic and political changes, but is a dynamic factor influencing these changes. Gender is about deep-rooted values and concepts that underlie our thinking, behaviour and actions in all areas of socio-economic life – a factor in understanding many of the processes of social and economic change and thus, an important criterion for ensuring the quality of research.

An understanding of the unequal power relations between women and men is necessary to understand the basic problem in gender relations. Power is directly related to gender with regard to the access, distribution and use of resources, which are unequally distributed between women and men. Power is indirectly related to gender in the operation of rules, norms and symbols concerning masculinity and femininity found in social interaction as well as in social organisations. The problem becomes apparent in societal symptoms such as unequal participation of women and men in public and private activities, for example the low value of unpaid household work predominantly carried out by women.

2.2 Gender mainstreaming

Gender mainstreaming is taking place in a range of organisations, but all too often it is limited to a sex-counting approach to gender, which merely addresses issues of male/female equity and equal opportunities. Studies highlight the need to reach beyond such an approach by recognising the transformation implicit in a more far-reaching gender mainstreaming policy. Within organisations women tend to be treated the same as men, rather than equal to them. Men are taken as the norm and consequently women are expected to behave like them with the same characteristics and life pattern. While some women are happy to embrace the male model and working practices, for many women gender mainstreaming is about changing the working culture just as much as changing the research agenda.

A true integration of gender into research would profoundly affect the way in which scientific knowledge is defined, valued and produced, the methodologies that are invoked, and the theoretical reflections to which such new modes of knowledge give rise.

A socio-cultural understanding of gender is necessary to move towards a more transformative gender approach. At its best gender should help to form the design and implementation of research and lead to transformation in the way in which research is carried out while at the same maintaining or enhancing research quality. A new trend can already be seen with a move away from quantitative measures, such as positive discrimination in recruitment, toward measures that promote a diverse workforce.

2.3 Call for sustainable science

Several studies have argued that western sciences have a masculine character. Gender stereotypes dominate the scientific discourse, epistemological assumptions of science are gender-biased and the shaping of the scientific agenda is male dominated. Furthermore, technology is perceived as a male preserve while femininity is constructed in terms of technological incompetence, leading to a situation in which technological products are outcomes of production processes which are dominated by men and thus reflect their interests. This means that men are generally perceived as “makers” and women as “users” of modern technology. The scientific work of Schiebinger (1997 & 1999) [2] is frequently referred to, particularly with regard to the impact of gender research when looking at the interdependency of scientific discourses and different forms of “how to do science”. The world cannot be explained exclusively with models that exclude all social dimensions. A re-constructive perspective is needed in basic research, which can be applied to research questions in all scientific fields from the gender perspective. Schiebinger calls this goal “sustainable science” [3].

According to Schiebinger, sustainable science needs to be considered in a pragmatic way, not only the epistemological issues of science but also the goals and outcomes of science should be looked at from the gender perspective. There is a need for a fundamental change in the scientific approach, including the use of a diversity of research subjects and a move away from the dominant research questions. To achieve sustainable science, the studies called for interdisciplinary and trans-disciplinary research and methods aimed at unifying natural, technological and social sciences. Sustainable science requires recognition of socio-economic elements to provide entry-points for the identification of gender impacts.

2.4 Uncritical use of language and concept

The use of language and concepts can determine the direction of scientific practice, the questions asked, the results obtained and the interpretations of those results. Several studies point to how the use of language and concepts can constitute and create gender bias, or simply fail to take account of gender, or other differences (for example, within research categories such as consumers, workers or citizens). Attention needs to be paid to the meaning given to concepts and to the recognition and understanding of gendered concepts. Different interpretations are also given to commonly used terms. For example, 'people' is used to refer to businesses, industrial and policy-making groups, rather than groups of people such as women or migrants, which in effect serves to exclude a gender or diversity dimension.

2.5 “There is no universal woman”

Feminists have contributed to the radical re-thinking of the production of knowledge, calling for the need to acknowledge diversity of all kinds. Within gender analysis not only gender, but other forms of diversity are considered, such as age, ethnicity and sexual orientation. Gender impacts may be different among different groups of women or even individuals, there is no such thing as a universal

woman. Therefore, strategies to incorporate gender issues into research should start with a reflection on how to acknowledge the biological, social and other differences between individuals.

2.6 Lack of data on women

The studies emphasised the importance of the collection of sex-disaggregated statistics to show the participation of women in science and technology and their views on specific issues. There are many areas in which research on gender issues is non-existent, scarce or fragmented due to a lack of statistics, for example: women and innovation (scarce), gender in the development of science and technology policy (scarce), women and energy priorities in industrialised countries (non-existent). Harmonisation of statistical classifications is also needed between countries. Even more difficult than quantitative analysis is the elucidation of more qualitative issues. The development of gender-sensitive indicators on the basis of appropriate sex-disaggregated statistics is regarded as indispensable for the integration of the gender dimension in European research.

2.7 Gender- biased education systems in science and technology

Women are affected by gender stereotypical approaches in formal education, in particular in science and technology. Gender bias lies in the education system and its teaching practices rather than in any inherent physical or intellectual barrier on the part of women. Educational gender inequality is a way through which inequality is transmitted from one generation to another. This problem relates to a variety of gender issues such as:

- Educational disparities between girls and boys;
- Pressure to conform to traditional gender roles in primary and secondary schools;
- Skewing science curricula in favour of interests and values of boys;
- Stereotyped sex roles in teaching materials;
- Lack of positive role models for girls in science and technology.

2.8 Gendered division of labour

The gendered division of labour refers to a complex set of values, norms, rules and practices in the field of labour where an asymmetrical distinction is produced. This distinction is shown between women and men, paid and unpaid work, work at home and outside, female and male tasks and professions. Occupational segregation is one of the key factors in the field consisting of both horizontal and vertical segregation. With horizontal segregation, choices of jobs for women are limited and stereotyped leading to women's concentration in certain labour markets. The association between "feminisation / masculinisation" in an occupation, and its status, is very strong and helps cause women's under-representation in technological sectors. With regard to vertical segregation, the term glass ceiling refers to the fact that relatively few women are promoted into managerial and higher positions despite their qualifications. Vertical and horizontal segregation of labour results in a gender pay gap – the appearance of gender roles in which men's authority is more highly valued both economically and socially than that of women.

2.9 Unequal representation of women in decision-making processes and leadership

Despite the strategies introduced to address the under-representation of women in political life, such as quotas, processes of decision-making and leadership are highly gendered, both in political arenas and economic fields. The lack of women in key decision-making positions within science is not just a matter of gender equity and influencing research agendas, it may affect the extent to which the gender dimension is treated in research itself. Organisations dominated by men tend to be resistant to gender mainstreaming and to employing women in decision-making positions. It takes time to change

attitudes of individuals and institutions and specific measures are needed in order to secure women's access to decision-making and leadership positions.

3 Gender Action in EMMA2 [4]

The Government of the Federal Republic of Germany as well as the German "Bundesländer" many years ago established measures to promote gender equality and set into force general rules on gender equality and anti-discrimination, e.g. equal opportunities, equal payment, punishment of sexual harassment in the office, etc. Article 3 of the German Higher Education Framework Act for instance contains the obligation of German universities to support gender equality and to abolish existing disadvantages and discrimination (§ 3 HRG).

Research organisations, universities, private and public entities set up own programmes in addition to existing public rules and activities in order to promote gender issues within their area of responsibility.

DLR, the German Aerospace Center has established the task of a full-time Gender Equality Nominee ("Gleichstellungsbeauftragte") in 1999. She is in charge of implementing the idea of gender mainstreaming within DLR.

Furthermore, the issue of gender equality is an important element to the DLR strategy, monitored by DLR's executive board and strictly observed when it comes to recruiting, career development and other aspects of DLR personnel policy. DLR is also very active in the field of raising public awareness, for instance by organising "Girls Days" or the annual conference „Women in Aeronautics and Space“, supported by the German Federal Ministry of Education and Research (BMBF).

The EMMA2 consortium includes private and public institutions from nine nations, which have additional action plans and measures to promote gender equality and to ensure a broader participation of women in public life.

Gender equality must be promoted within the field of Air Traffic Management as well as all other fields of research. This is believed to both strengthen efficiency and improve quality in all work and cooperation. Male and female researchers should therefore be offered equal opportunities and encouragement considering their personal resources and life patterns. The aim for gender equality should be a natural part of all work and cooperation within the field of aeronautics.

In general, the number of women within A-SMGCS research and implementation, like in other areas of engineering research, is much smaller than that of men. Eliminating such inequalities is a long term task, which should encourage female students to perform internships or diploma or doctoral theses in the field of ATM and to provide an environment in A-SMGCS testing and development which addresses women's needs as much as men's needs.

A number of actions such as mentoring, equal opportunity projects, linking to female students at the universities and networks for female researchers are of course already carried out by a number of organisations. However, this EMMA2 partnership can contribute to gender equality by forcing all partners to consider good examples and experiences in order to take further steps towards gender equality.

Moreover, EMMA2 has set up its own strategy to deal with gender issues, assuming the basic limitation of an initiative "within the walls". There are very few options to act beyond the Integrated Project's own boundaries. Nevertheless, the actions internally taken in this matter have set an example of using integration as a tool for implementing gender equality.

4 EMMA2 Database about gender aspects

The following chapters show a detailed analysis of the gender aspects within the EMMA2 project. The data base contains those persons who were announced to the author of this statistic and have done significant work - in means of time - either in the technical scientific area or in the administrative organisational part. However, the controllers and pilots who were involved during the simulation and life trials are not taken into account even though they have significantly participated to the project success but with less time involvement. The gender balance especially in this ATC business is much better than in the EMMA2 project itself.

The EMMA2 consortium consists of:

- 9 European countries (additionally Belgium as EC headquarters)
- 21 contractors
 - Additionally 5 supporting companies
 - Additionally EUROCONTROL and EC
- 180 persons are involved significantly – in means of time spent on the project
 - 123 scientific / technical staff, of which 35 are at a decision level
 - 39 administrative supporting staff
 - 8 additional persons from supporting companies (without controllers and crews)
 - 10 persons from EUROCONTROL and EC

Table 4-1: EMMA2 Database

4.1 Overall gender distribution

As expected, EMMA2 - defined as a research driven project – clearly shows the unbalance between women and men.

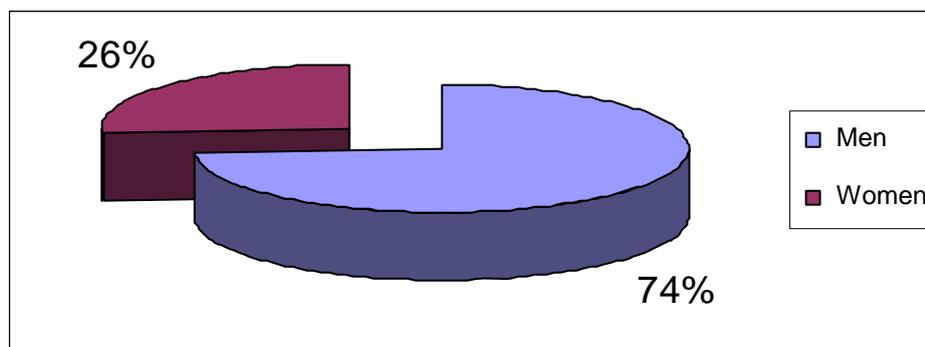


Figure 4-1: Gender distribution of EMMA2

4.2 Total gender balance in the involved countries

In EMMA2 there is no significant difference of gender aspects between middle and north European countries.

4.2.1 Total Human resources relating to countries

To understand the different weighting of women involvement in the participating countries the following graph figures out the different amount of the total human resources within these countries.

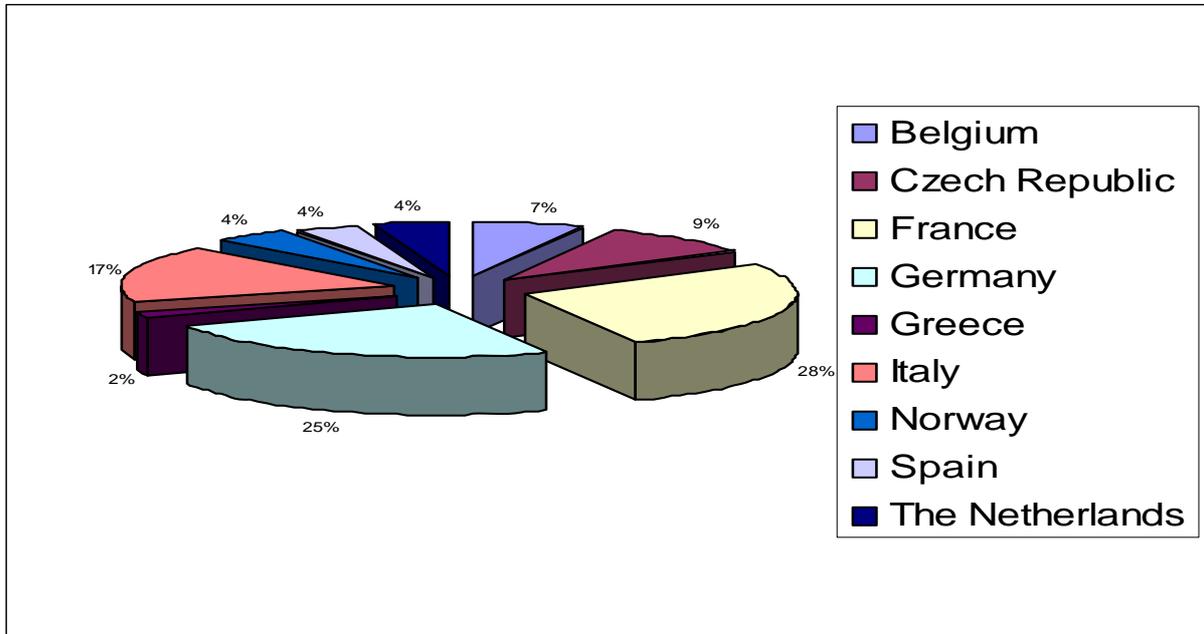


Figure 4-2: Human resources in the project

4.2.2 Women resources relating to countries

The following figure shows the distribution of female personnel in dependence of the involved countries. In Figure 3-2 France, Germany and Italy have the largest number of personnel involved which is also represented in the percentage of women involvement: The consequence is that France, Germany and Italy represent the highest amount of women involvement.

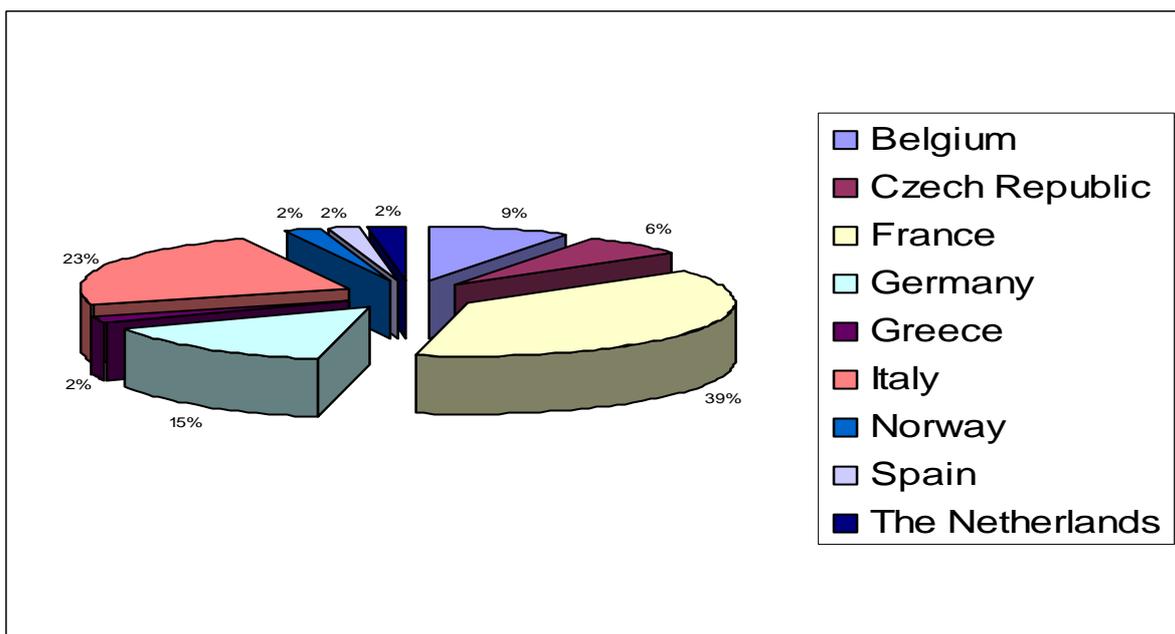


Figure 4-3: Female personnel over countries

4.3 Absolute Women involvement split of countries

Looking into details, figure 3-4 shows the absolute numbers of human resources in EMMA2 and differentiates between women and men.

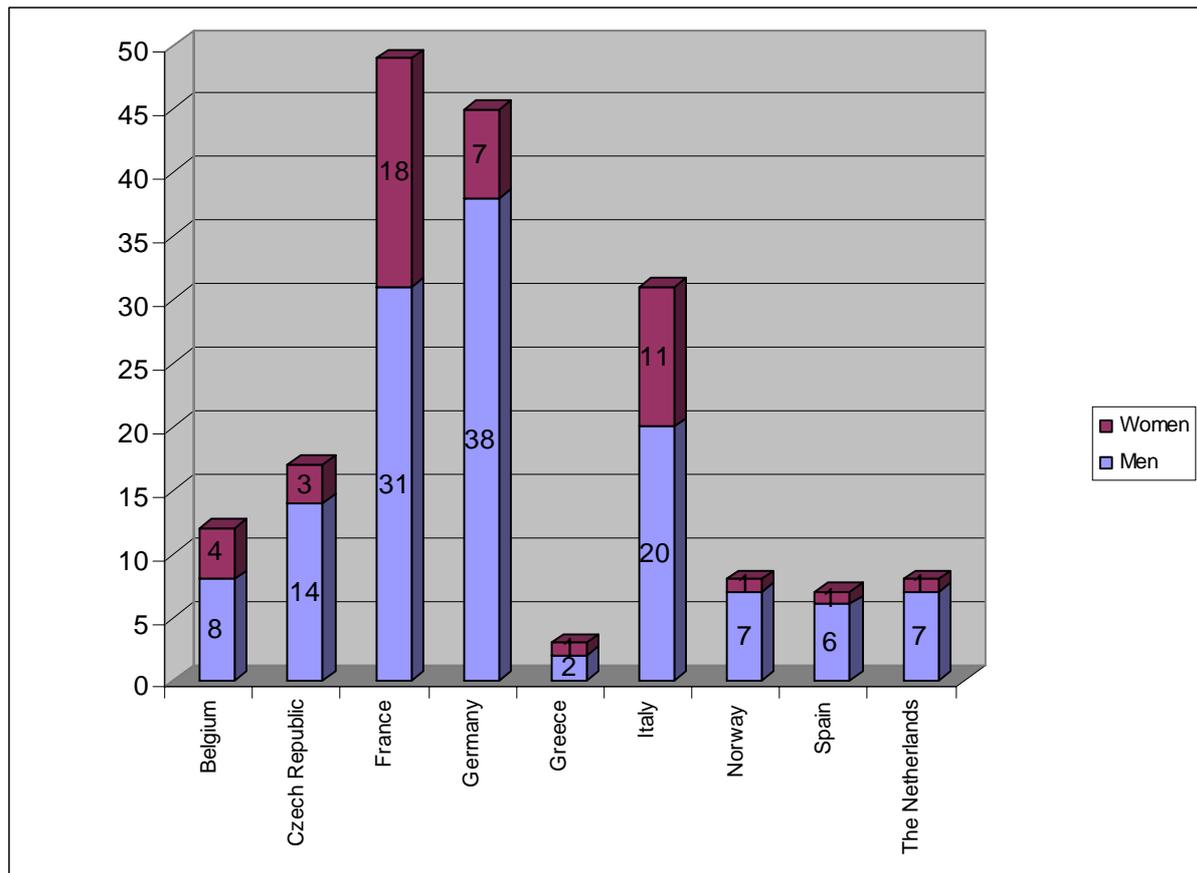


Figure 4-4: Absolute gender distribution over countries

4.4 Gender distribution relating to working areas

Three main working areas are identified within the project:

1. Administration area:
These persons are dealing with the project support with regards to organisational and administrative issues
2. Decision level:
These persons are responsible for all decisions related to:
 - a. Budget changes
 - b. Work adaptations
 - c. Effort shifts

Remark: This categorising does not necessarily reflect the authorised persons responsible for the signatures. Those persons are - in view of time spending on EMMA2- not necessarily of statistical relevance.

3. Scientific area:
These persons are mainly responsible for carrying out the work defined in the Technical Annex I.

Table 4-2: Definition of working areas

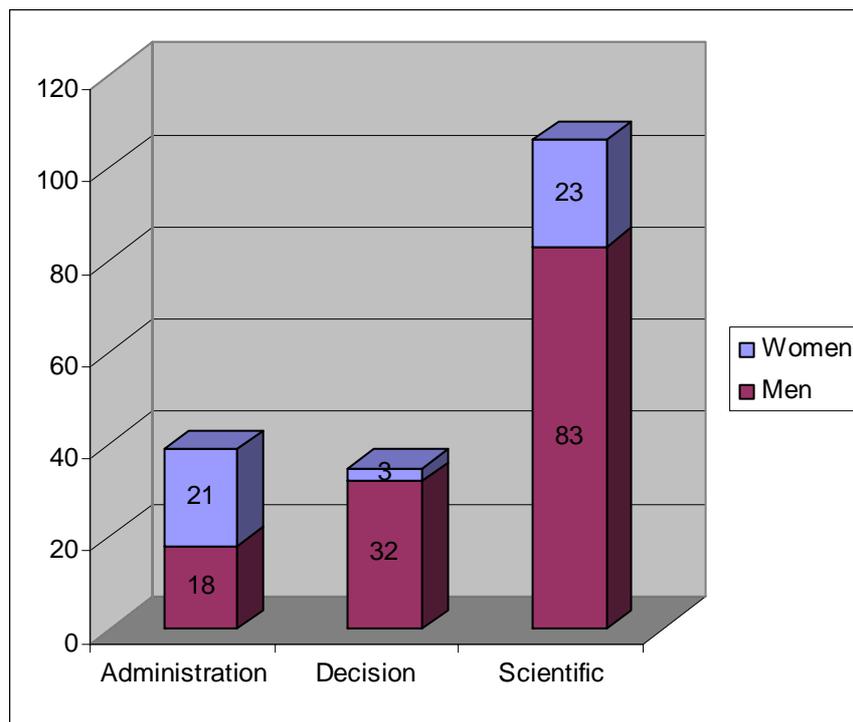


Figure 4-5: Gender distribution over working areas

5 Conclusion

5.1 In the view of EMMA2

It is widely recognised that women's participation at all areas of EMMA2 remains low and that action should be taken to ensure that such participation is maximised. However, it is for sure that care must be taken to ensure that this aspect of gender issues does not take dominance over others. Research by women is only one aspect which by itself will not necessarily lead to better research results. Projects like EMMA2 cannot solve gender problems which are based on old fashioned education of children starting at school and continuing at the university. The low proportion of women in the technical and scientific area can be seen as a mirror of our society within scientific, technical and research projects like EMMA2. The EMMA2 system although will assist the daily work of controllers and pilots independently of the gender.

EMMA2 has given equal opportunities to male and female European citizens to contribute to the project as e.g. engineers or users. No difference is made between males and females in EMMA2. Gender differences therefore were of no significant importance. The EMMA2 IP was of course open to suggestions on any relevant gender issues within this field. Further more, EMMA2 has improved the gender issue in comparison to EMMA: The female personnel ratio increased from 21% to 26%, the number in total from 33 to 47 women involved.

During the project phase several events took place dealing with increasing women's participation in technical jobs at an early stage of education. One exemplary event is celebrated at DLR every year, the so called 'Girls Day'. This day is organised for girls aged ten to 16 visiting their fathers' or mothers' business. A special frame programme offers the girls an excellent insight into the scientific work at DLR in the following areas:

- Energy
- ATC
- Space
- Ground Transport
- New Materials

5.2 In the view of the society [1]

It is important to develop awareness of the benefits that integrating gender into research and development will bring to the research community as a whole. Resources will be maximised not just by using the variety of skills that women and men offer, but by ensuring that the needs of both women and men are addressed within research and that gender relevant research is undertaken. The results will help to develop competitive technologies making a positive contribution to the main goals of the Framework Programme.

6 Annex I

6.1 References

- [1] European Commission DG-TREN
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For further information about action taken at European level to promote gender equality in research, please consult the Women and Science web-site:

<http://www.cordis.lu/rtd2002/science-society/women.htm>