WHY GENDERED SCIENCE MATTERS

HOW TO INCLUDE

GENDER DIMENSION

INTO RESEARCH PROJECTS



"It isn't really necessary to live such a peculiar life as I have, but you see I so love science."

MARIE CURIE

"An empirical science cannot tell anyone what he should do - but rather what he can do - and under certain circumstances what he wishes to do. It is true that in our sciences, personal value-judgments have tended to influence scientific arguments without being explicitly admitted."

MAX WEBER



CONTENTS

Acknowle	dgements	•
Introduct	ion	•
	What is gender	
	Towards the concept of gendered science	
PART I.	Background	1
	Motivation beyond manual	1
	Methodology applied	1
	Main objectives of this manual	1
PART II.	Main strategies for promoting	
	gender equality in science	1
PART III.	Gender mainstreaming and science policy	
	in European research	1
PART IV.	Asking the right questions: how to include	
	gender dimension into your research project	2
PART V.	Learning by doing: case studies	2
Conclusio	n	3
Reference	es	3
Annex 1:	Brief glossary of gender terms	3
Annex 2:	Checklist of questions and indicators	4

ACKNOWLEDGEMENTS

We would like to express our thanks to Marina Blagojevic, Maca Jogan and Dagmar Lorenz-Meyer for their constructive comments and useful recommendations.



INTRODUCTION

The common notion of science deeply rooted in European intellectual tradition, according to which science is an autonomous field of human reasoning, immune to social and cultural influences, has been challenged from a variety of perspectives during recent decades. Some of the perspectives understand science as a set of historically, socially and culturally situated practices as well as a social institution in itself. Because science is a human activity, it is unlikely that it is not influenced by the social and cultural context within which it has developed. Due to the fact that Western societies and Western cultures are deeply permeated by gender, the socially constructed characteristics, roles and expectations of men and women a question about the role of gender in science arises. As some feminist philosophers and scientists show, science is not immune from gender norms and interests.

It is a matter of fact that the images of science as well as the actual practices of scientific investigations into natural or societal phenomena since the rise of modern science in 17th century have been dominated by men. This historical fact has influenced the scientific work at various levels - e.g., regarding the subjects of research, methods applied, patterns of explanation, paradigms of research, interpretation of outcomes, language used, etc. Given this point, the rise of modern western science can be viewed and interpreted as a gendered process, both in its organization and techniques. Therefore, it is reasonable to assume that science, in opposition to the above mentioned widely accepted presumption, is not gender neutral, but is gendered.

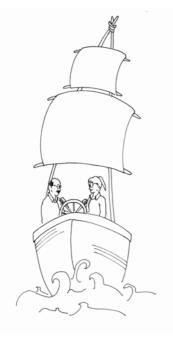
Before we explain the concept of gendered science, some explanatory remarks concerning the term "gender" are required.

What is gender?

"The distinction between sex, binary physical anatomy, and gender, the cultural interpretation and expression of the sexed body" was developed within feminist theories and was directed against the dominant understanding that the differ-

¹ See Encyclopedia of Feminist Theories. Ed. by Lorraine Code. Routledge, 2000, p. 220.





ences, for example mental or behavioural, between men and women, were natural phenomena resulting from their biological sex. The shift from talking about sex to understanding gender signals that biology or anatomy is not a destiny, as it was traditionally held. For the purposes of this manual we can use the consensual definition widely accepted and used also in EU political documents, according to which gender is "a concept that refers to the social differences between women and men that have been learned, are changeable over time and have wide variations both within and between cultures".²

On the basis of this definition, the very expression "gender" is not exclusively about women, but refers to the relationship between women and men

as social constructions of their different gender roles and identities.

Moreover, gender should be understood not only as the "property" of individuals in the sense of a form of their socially and culturally constructed individual identities or their social roles, but also as a "property" of institutions and symbolic systems.³

Towards the concept of gendered science: in what sense science can be viewed as gendered?

First of all, it is useful to distinguish between two different meanings, in which we can speak of gendered science and the gender dimension of science:

- gendered science concerns the gendered character of the very notion of science and the content of science, which means scientific theories, paradigms and methodology.
- the gender dimension of science points to the gender structure of the research staff.

See 100 words for equality. A glossary of terms on equality between women and men. Available at

http://ec.europa.eu/employment_social/gender_equality/docs/glossary/glossary_en.pdf

See Sandra Harding, The Science Question in Feminism, Ithaca and London: Cornell University Press, 1986, p. 17-18.



Science, or more precisely some scientific theories, are gendered in the first sense because they are gender biased. It is possible to distinguish at least four ways in which science is seen as gender biased or masculine:

- 1. Firstly, in Western culture the leading norms of scientific behaviour and scientific method such as objectivity, unemotionality, disinterestedness, impartiality and autonomy are viewed as the norms of masculinity, in contrast to the norm of femininity. Gender bias in this sense permeates the very ideals of reason and rationality defined by exclusions of the "feminine". Consequently, the scientific enterprise itself became interconnected with the character traits traditionally seen as typically male.
- 2. The second sense, in which science is understood as masculine, is connected with the fact that science has been controlled and dominated by men.
- 3. The third way is linked with the tendency of modern sciences to render women invisible in knowledge-making and marginalized in research. Examples of research based on male situations or studying only male subjects can often be found. In such research women's concerns and experiences are simply invisible. An example of this is some psychological and medical research, which presents, as universally valid for men and women, conclusions acquired from investigation of only male subject.⁵
- 4. Finally, science can also be seen as being gender biased in terms of its uneven portrayal of men and women, essentially by portraying women mainly negatively.⁶

Generally speaking, gender bias can be understood as "the often unintentional and implicit differentiation between men and women situating one gender in a hierarchical position to the other, as a result of stereotypical images of masculinity and femininity steering the assessment and selection process or the gendered structure of the scientific system". It is worth stressing that "such hidden influences and biases are particularly insidious in science because the cultural heritage of the practitioners is so uniform as to make these influences very difficult to detect and unlikely to be brought to light or counterbalanced by the

See Code in Encyclopedia, p. 20.

See Janet A. Kournay, A New program for Philosophy of Science, in Many Voices, In: Janet A. Kournay, (ed.), Philosophy in a Feminist Voice. Critiques and Reconstructions, Princeton, New Jersey: Princeton University Press, 1998, pp. 231-261.

See Code in Encyclopedia, p. 20.

See Gender and Excellence in the Making. European Commission, Directorate-General for Research, Brussels, 2004, p. 13.



work of other scientist with different attitudes. Instead, the biases themselves become part of a stifling science-culture...".8

Speaking of gendered science in its second sense, in which it is understood as masculine, being dominated by men, means pointing out the gender structure of who is conducting scientific inquiry at various levels, e.g., at the level of a scientific institution, epistemic community, particular scientific discipline, etc. Science is gendered in terms of vertical and horizontal gender segregation within it.

These two meanings, of course, do not cover entirely what is called the gender dimension of science, but they can be regarded as the most basic and important traits of science as gendered phenomena.

It is also important to stress that the above mentioned two basic meanings or levels of gendered science should be viewed as something negative, as something that should and can be changed in order to make it possible for all scientists regardless of gender to flourish in the scientific community. Nevertheless, when dealing with gender dimensions of science one can also speak of its positive aspect, meaning gender balanced research staff and gender sensitive scientific inquiry.



This manual is intended to help readers recognize the gender dimension in science in order to eliminate gender bias in their project proposals on the one hand and to develop a gender sensitive research project on the other. They should also bear in mind that the gender dimension in science is not only about increasing the participation of women in research pro-

jects or programmes. In order to integrate the gender dimension into science we should go beyond a simple "sex - counting" approach. We need to move from quantitative indicators of women's participation in the scientific community towards the measures that promote gender balanced research at every level of scientific activities. As indicated by the above considerations, integrating the gender dimension in research requires a transformation of research design, paradigms and key concepts underlying this design. This is related to the very nature

See Marion Namenwirth, Science Seen Through a Feminist Prism, in: Ruth Bleier (ed.), Feminist Approaches to Science, Teachers College, Columbia University, 1991, pp.18-41, p. 29.



of science and it means an important change of science culture and underlying social conditions. This transformation implies a move towards creating and promoting a science culture and environment free of gender bias.

In this context, it is important to speak of science culture and environment in a broader sense as the gender biases can be identified also in the definition and measurement of scientific excellence, they can occur in the criteria used to assess, and in the choice of indicators for scientific excellence, in terms of how these are related to men and women.⁹

See Gender and Excellence in the Making. European Commission, Directorate-General for Research, Brussels, 2004, p. 13.



PART I. BACKGROUND

Motivation beyond manual

As indicated above, science, as a social institution as well as an activity and a set of theories, can be viewed as gendered in several ways. A lot of work has been done, mainly by feminist scientists and philosophers, to show that there are various forms of gender biases in some scientific research. Besides individual forms of explicit gender biases one can often find the lack of sensitivity towards gender, the so called gender blindness of science and technology.



The European Commission initiated a series of gender impact assessment studies, evaluating the ways in which gender issues were addressed in the Fifth Framework Programme (principal research funding stream of the European Commission). Several findings related to gender perspective in science have been articulated within these gender impact assessment studies. The studies show, for example, that scientific research is frequently gender blind even in research fields in which the human dimension is crucial such as human health or socio-

economic research. Other findings refer to the language used in science and the way the use of language can create gender biases. Using a particular concept and language has an influence on the direction of scientific inquiry, on the types of questions which are raised by scientists, on the results obtained and on the interpretations of these results. Use of language can, for instance, essentially contribute to a creation of gender bias in the case of no attention being paid to gender differences. This especially applies to research fields such as socio-economic or health, where human subjects are predominantly spoken of in terms of gender-unspecific consumers, citizens, workers. Generally speaking, these findings indicate not only gender blindness of science and technology, but also some forms of openly and explicitly gender biased researches. Some of these findings occur across the whole Fifth Framework Programme, while others are related only to some thematic areas.



Methodology applied

We apply tools of gender analysis appropriate to the purpose of this manual. Gender analysis, in general, can be defined as a "study of differences in the conditions, needs, participation rates, access to resources and development, control of assets, decision making powers, etc. between women and men in their assigned gender roles". Gender research is to be understood as a research exploring the significance of gender in all areas, e.g., culture and society; it may deal with all forms of human existence as well as various cultural and social phenomena. While considering the gender dimension of science, the following tools of gender analysis can be extremely useful:

- an analysis of priorities and outcomes of projects
- analysis of subjects chosen for study
- gender dynamics in scientific institutions and within project staffs

In terms of these aspects of gender analysis we can formulate several gender equality indicators. These indicators could be used to measure gender dimension in particular research projects.

Main objectives of this manual

At the level of project content

- help researchers to understand the "gender and science" issue and make them more sensitive towards the gender dimension of/in science;
- indicate ways of including the gender dimension into research projects and to designing more gender sensitive project;
- eliminate gender bias in proposed projects;
- indicate how incorporating a gender dimension into research proposals will help researchers write a more competitive proposal.

At the level of project impact

- show why it is important to create a gender balanced research team;
- make research project more interesting for society.

¹⁰⁰ words for equality. Available at http://ec.europa.eu/employment_social/gender_equality/docs/glossary/glossary_en.pdf



For whom the manual is intended

- researchers writing proposals;
- advisors to researchers, e.g., National Contact Points;
- proposal evaluators.

What the manual cannot do

- provide tools for positive discrimination;
- replace European Commission documents;
- help researchers to create balance between private life and scientific career;
- help people to access EU funds;
- teach researchers how to re-define science;
- teach researchers how to carry out a gender analysis without a special training.

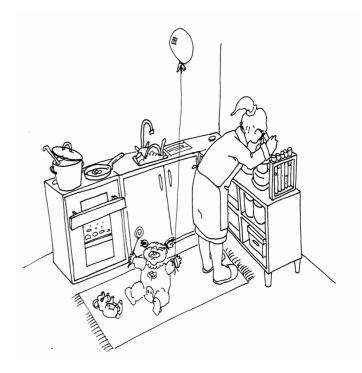


► PART II. MAIN STRATEGIES FOR PROMOTING GENDER EQUALITY IN SCIENCE

Several strategies and measures have been developed in the European Union in order to promote gender equality in science. Here are the following main strategies:¹¹

- equal treatment;
- advancement of women through positive action;¹²
- gender mainstreaming.

These three broad approaches forming the core of the new gender equality policy are articulated in several documents of the European Commission as well as in The Treaty of Amsterdam. The most general is the strategy of gender mainstreaming, which is designed to complement the legal right women have to equal treatment and special actions addressing some of the disadvantages they face.



Gender mainstreaming can be conceived of as a long term strategy, as "the systematic integration of equal opportunities for women and men into the organi-

See, e.g., Science Policies in the European Union. Promoting Excellence Through Mainstreaming Gender Equality. A Report from the ETAN Expert Group on Women and Science. European Commission, 2000, p. 2.

E.g., Ada Lovelace Mentoring Association in Germany, founded in 1997 in Rhineland Palatinate, aimed at motivating young women to choose career in Science, Engineering and Mathematics - SEM, as well as at building network and strategic alliance between male and female scientists.



zation and its culture and into all programmes, policies and practices; into ways of seeing and doing". 13

It is important to stress that gender mainstreaming should not be restricted to a sex-counting approach. Gender mainstreaming complements the equal treatment principle; equal treatment principle, even though necessary, alone is not sufficient for achieving real gender equality. In other words, equal opportunities do not guarantee equal uptake and outcome. When women are treated in the same way as men are, it does not imply equality between women and men as it does not recognize the different conditions under which men and women operate. For example, women are often affected by gender stereotypical approaches in education, mainly in natural sciences and technology. Education system and teaching practices can thus function as disseminators of the inequality across different branches of science.

Mainstreaming gender equality in science policy aiming at reaching gender balance includes three perspectives:¹⁴

- research carried out by women;
- research for women;
- research about women.

Implementing these three perspectives in science policy means it is necessary to:

- promote women's participation in research activities;
- take into consideration women's needs and interests when setting research agenda;
- promote understanding and inclusion of gender issues.

In this sense gender mainstreaming in science also means:

- promotion and stimulation of gender relevant research;
- focus on changing structures and conditions on which different inequalities are based.

Science Policies in the European Union. Promoting Excellence Through Mainstreaming Gender Equality. A Report from the ETAN Expert Group on Women and Science. European Commission, 2000, p. 2.

See Science Policies in the European Union. Promoting Excellence Through Mainstreaming Gender Equality. A Report from the ETAN Expert Group on Women and Science. European Commission, 2000, p. 2.



EXAMPLE OF GENDER MAINSTREAMING POLICY

One example is the establishment of an action plan to promote gender equality in science through research by women, for women and about women.

The advancement of women through positive actions is oriented towards women and designed to eliminate discrimination against them. It is a specific intervention having a short-term effect to counteract discrimination against women.

All attempts are directed towards an increase of women's participation in expert evaluation panels, in mobility actions, in programme committees.

As already mentioned, the mainstreaming of gender equality into science is a policy developed by the European Commission and it is embedded in several documents which form an important background for any science policy.

Gender issues form an important part of the European Union respectively articles of the Treaty

- Article on Equality 2, 3
- Article 13 on Discrimination

EU POLICIES

- Mainstreaming of equality Com (96) 67
- Promoting participation of women in R and D Com (98) 112

GENDER ACTIVITIES in FRAMEWORK 5/6

- ETAN REPORT
- ENWISE REPORT (Science and Society, EC, 2003)
- Other important texts (e.g., Gender and Excellence in the Making. Science and Society, EC, 2004)



► PART III. GENDER MAINSTREAMING AND SCIENCE POLICY IN EUROPEAN RESEARCH

Gender in the 6th Framework Programme

Gender dimension in the work programmes of the thematic priorities Seven thematic priorities

The Framework Programme is the European Union's main instrument for research funding. The Sixth Research Framework Programme (FP6) was effective from 2003 to 2006. Its strategic objective was the creation of the 'European Research Area' (ERA) - an internal market for science and technology.

The general principle of the EU 6th Framework Program was concerned with the gender differences and calls for gender sensitive approaches rather than giving priority to uniform - gender-blind approaches.¹⁵ To achieve gender sensitive approaches at the project level, we should divide this general attempt to two dimensions as it is presented in the guide for gender in 6th Framework Programme.

These two dimensions are as follows:

- gender dimension of the research content;
- promotion of gender equality by encouraging women's participation.

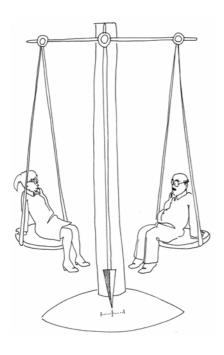
Seven key areas were defined, relating to the content of the research in the Framework Programme in order to increase the competitiveness of the European economy including the principle of sustainable growth and move towards a knowledge based society. According to this general short-term goal the following thematic priorities were formulated:

- life sciences, genomics and biotechnology for health;
- Information Society Technologies (IST);

¹⁵ (6th EU Framework programme)



- nanotechnologies and nanosciences, knowledge-based multifunctional materials, and new production processes and devices;
- aeronautics and space;
- food quality and safety;
- sustainable development, global change, and ecosystems;
- citizens and governance in a knowledge-based society.



The listed themes cover a wide range of scientific disciplines and research areas, some of them directly including gender as the main focus of research or as an aspect at the level of methods used. Many projects within the themes work with humans as subjects of the research and the impact of the research should be evaluated according to their gender dimension. The "work programme" elaborates the detailed priorities for the projects. Although work programmes differ in terms of the level of inclusion of gender dimension, there is great potential for gender sensitive research. In addition to this, there should be a place for women to shape the research content and priorities of particular disciplines which inevitably requires a higher level of participation of women in the research. Generally speaking, even though the work programme does not contain specific gender-related measures or objectives, the overall EU objective of mainstreaming gender in all areas of research remain valid.

EXAMPLES OF GENDERED THEMES IN THE 6TH FRAMEWORK PROGRAMME

Life sciences, genomics and biotechnology for health

The theme is directly oriented towards human beings as subjects of scientific research. Therefore, an analysis of gender disaggregated data serving as an input to research is necessary. Moreover, the programmes aim to contribute to research in order to increase the level of public health and the quality of life. Gender dimensions should be present at the level of both research content and impact.

» Work programme

The work programme mentions the gender dimension only in terms of the subject of the projects. It means that there is a need for gender disaggregated data for the risk factors, biological mechanisms, disorders, manifestation and consequences of diseases,



in biological, epidemiological, behavioural studies. The studied population should also be carefully evaluated from the gender point of view.

» What should be done?

The gender perspective is necessary to test for research impacts on the improvement of public health and to define the priorities in the area of public health and with regard to women and men separately. Other categories such as age and ethnicity also have to be involved in assessment, needs and impacts of improvement in quality of life.

Information Society Technologies (IST)

The main area of the theme is to apply IST to address major socio-economic problems, development of communication, computing and software technologies. Its thematic priority also covers projects dealing with knowledge and interface technologies, IST future and emerging technologies.

» Work programme

Gender is not mentioned

» What should be done?

The theme objectives address socio-economic problems such as e-government, e-work systems, and e-learning. These aspects are strongly affected by gender roles and stereotypes, therefore a gender dimension could be included at the level of the project staff as well as at the level of the research content and impact. IT is a rapidly developing field with strong gender segregation; there is a need for clear commitment and improvement of the existing inequality.

Nanotechnologies and nanosciences, knowledge-based multifunctional materials, and new production processes and devices

Research is focused on interdisciplinary research on nanotechnologies, development of knowledge-based multifunctional materials, new processes and flexible and intelligent manufacturing.

» Work programme

Gender is not mentioned

» What should be done?

This area of research is strongly affected by gender disparities and segregation. Therefore it is necessary to support the participation of women in the areas in which they are highly underrepresented. Moreover, there is a strong gender disparity at the technology user level.



Aeronautics and space

The theme focuses on the increase of technological excellence and concentrating RTD.

» Work programme

Gender is not mentioned

» What should be done?

This area of the research is strongly affected by gender disparities and segregation in terms of participation of women in the research community. Therefore it is necessary to support the participation of women in the areas in which they are highly underrepresented in.

Food quality and safety

The objective is to improve the health and well being of European consumers through a higher quality of food and an improved control of food production. The theme is readdresses the classical farm to fork approaches with the focus being aimed at consumers

» Work programme

Gender is not mentioned

» What should be done?

The research theme has a strong gender dimension in terms of research content and impact. With respect to gender roles as such, men and women play different roles as consumers. Moreover, the impact of food should be tested both on men and women and special attention should be paid to safety for pregnancy as significant factor in the lives of many women.

Sustainable development, global change, and ecosystems

The theme deals with three main issues such as sustainable energy systems, surface transport and global change and ecosystems.

» Work programme

Gender is not mentioned

Only the evaluation criteria information mention that the project will be evaluated according to gender issues, ethical and/or safety aspects, and the education dimension.

» What should be done?

The design of sustainable technologies such as transport or preparation of sustainable development strategies concerning land and natural resource access and use must re-



spond to gender roles and responsibilities. Therefore the activities assessed in the research of this theme have a strong gender dimension and the outcomes and proposed measures impact on women and men in potentially radically different ways.

Citizens and governance in a knowledge-based society

Mobilization of the European Research Area seeks to address and understand the issues concerning knowledge-based society and new forms of relationship between citizens and institutions.

» Work programme

The work programme addresses gender issues in the context of building a knowledge-based society and thus the importance of understanding knowledge in terms of gender. The relationship between citizens and institutions should be seen also as a gendered phenomenon, so some gender disaggregated data serving as an input to research are needed. Gender is to be taken into account in the evaluation of proposals.

» What should be done?

The work programme provides well-structured insights into gender issues and particularly gender is strongly emphasized in terms of research content. The final note that the gender dimension will be taken into account at the level of evaluation is a significant development.

From this brief overview of presented work programmes we can see that the current focus on gender dimension is strictly restricted to the inclusion of gender in the input data for the analyses and to estimate the impact of the outcomes on women and men. In the work programmes there are no supportive guidelines or measures included to guide or encourage gender sensitive shaping of the research content.



► IV. ASKING THE RIGHT QUESTIONS: HOW TO INCLUDE GENDER DIMENSION INTO YOUR RESEARCH PROJECT

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

(Hoogland and van der Stenn, 1999 in ENERGY)

Gender dimension of research content

When you start thinking about your project, you should carefully evaluate the inputs, content and the expected outcomes of your potential project from the gender point view. It is not an easy matter; concerning their scientific discipline, scientists are accustomed to think in relatively narrow terms. Nevertheless, the

need for including the gender dimension could be understood as a challenge to evaluate the quality of one's project from another perspective. The attempt to engender research creates new opportunities to enrich and improve your research in terms of methods, tasks and bettertargeted outcomes. You should formulate specifically women and gender related goals separately from the general goals, methods and tasks, which means systematically



questioning whether gender is relevant in each step of your project. There is a list of questions to help you when assessing gender within the content of your research. To illustrate the point we provide you with some examples of how gender could be treated in selected scientific fields. Gender dimension in these examples is evaluated and simplified to questions and indicators listed at the end of this guide. But before doing so, a general rule can be formulated as follows:



As soon as you start thinking about the gender dimension during the preparation of your project, this will help to strengthen the conceptual framework of your project.

To make your work on including the gender dimension to your project easier, try to apply a gender dimension to the following:

- defining the priorities and tasks of the project;
- selecting the methods to be used in the project;
- defining the expected results;
- supporting a promotion of gender equality by encouraging women's participation.

In defining the priorities, the following questions are important:

- Are there any hidden aspects involving gender roles and stereotypes in your objectives?
- Are there any gender differences connected to your research subject?

Example: Preparation of development plans in case of rural, industrial or environmental issues deals with socio-economic problems which are strongly affected by gender roles. Therefore, it is necessary to give special attention to gender dimension of the development policies.

Indicators:

- Priorities take into account different gender roles
- Detailed overview of linkage of your scientific field and gender (coming from other disciplines)

In defining the *tasks* the following questions are important:

- Do the tasks defined in your research involve individuals or populations as the research subject?
- Are the differences between men and women stated in your tasks?

Example: Working with economic data such as household expenses, employment, salaries is strongly influenced by gender roles and responsibilities. The average level of these indicators could be biased and gender disaggregated data could be beneficial in order to be able to complete better-targeted research.

Example: Assessment of the adaptation to global changes such as globalization or climate changes requires the inclusion of gender dimension to enable us to use a holistic approach and assess diverse aspects of the process. It means that the assessment of adaptation measures should be evaluated according to



gendered roles and responsibilities to be able to capture the particular situation in field of your interests.

Indicators:

- Detailed description of the target groups involved in your research divided by gender directly or indirectly (in terms of the impact of your work)
- Defined gender-specific project tasks

In selecting the *methods* the following questions can be helpful:

- Do the methods you intend to use in your research involve human beings or populations?
- Is the number of women and men in the sample used for a particular research activity balanced?

Example: Coronary artery disease (CAD) and atherothrombosis (AT) kills more individuals in Europe than any other disease. 600,000 people are diagnosed with myocardial infarct (Ml) yearly, with 50% being fatal and many survivors experiencing a reduction in quality of life. Development of better drugs for the prevention and treatment will also be facilitated by a greater understanding of the mechanisms of platelet interaction with the damaged vessel wall and with other blood cells (BLOODOMICS).

Indicators:

- Gender sensitive methods which reflect gender differences are included
- Gender balance in the groups involved in the project such as testing groups or samples

In formulating of the *expected results* the following questions are important:

- Could different impacts on women and men be expected in your research?
- Could the project's conclusions and outcomes of your research be better utilized in real life provided gender dimension is included in it?

Example: The gender segregation on the labour market imposes different tasks for women and men. By recommending the adoption of new policies in agriculture with the aim to increase biodiversity protection, changing the use of pesticides and introducing new species of vegetables for planting, different tasks for women and men will be manifested.

Indicators:

Gender segregated conclusions reflecting structural and functional diversity of the society



- Gender impact assessment of results is included
- Gender sensitive policy recommendations

The use of already developed methodological tools, such as gender impact assessment, will be recommended in case of projects where the gender impact is recognized.

In building *the research team* the following questions should be asked:

- Is there a gender balance among the leaders of each participating institution in your project?
- Is there a balanced number of young scientists both women and men?
- Is the gender balance in your team reflected also in the number of working hours?
- Do you consider the gender dimension and young scientists in training activities?

Example: From the PhD students involved in EU Sixth Framework project, the gender balance is 52,4% men and 47,6 % women. The gender gap starts to open at the level of post-doctoral researchers. The percentage of men involved in the EU Sixth Framework project as post-doctoral researchers is about 61,8%, as for women it is about 38,2%.

Indicators:

- Number of women and men in the project team
- Number of young scientists, male and female, in the project team
- Number of working hours for men and women
- Gender balanced participation of women and young scientists in training organized by your project

After the completion of the proposal

After including the above listed questions in your proposal it will be gender sensitive in terms of scientific content, tasks, and expected results at the level of participation of both genders. On completion of the project cycle, with special attention devoted to gender issues, you will have developed new skills and accumulated experiences which can be applied to future projects.



► LEARNING BY DOING - CASE STUDIES

The aim of this chapter is to illustrate and point out ways in which a gender dimension can be included into a research proposal.

"A case study is always a study of the particular and in case study we try to seek out what is common and what is particular about the case. It is possible to distinguish several types of case studies, but for our purposes it will be sufficient to distinguish between the so called intrinsic and instrumental case studies. An intrinsic case study is undertaken because one wants to have a better understanding of the particular case at hand. In what we call an instrumental case study, a particular case is examined in order to provide an insight into an issue or in order to refine some theory. The case is of secondary interest; it plays a supportive role, facilitating our understanding of something else." We conceive our study as an instrumental one - we offer it as a tool for developing gender sensitive research projects and for eliminating gender bias in sciences.

With the aim to show you why it is important to build a gender sensitive research we will offer you some specific examples illustrating gender blind or gender biased research.

In the second part of the text we will introduce two current research projects that are to illustrate how it is possible to make them gender sensitive by using this manual.

I. Gender biases in science: three examples

As Linda Schiebinger shows, in biomedical sciences there were several large and influential studies that omitted women as both subjects and objects of medical research, for example the so called Multiple Risk Factor Intervention Trial in the USA, investigating the correlation between blood pressure, cholesterol, smoking and coronary heart disease in 12 866 men and 0 women. The

[25

¹⁶ Case studies. In:. Handbook of Qualitative Research. Norman K. Denzin, Yvonna S. Lincoln (eds). SAGE publications, 1994, pp. 236-247.



results of such studies, where the sample consisted only of men, were extrapolated and still have been applied to women.¹⁷

- Another example comes from the field of primatology, within which the very stereotypical and biased image of the role of males and females was prevalent until recently, especially in 1950s and 1960s. Primatologists commonly have divided primates into three groups for study: dominant males, females and young and peripheral males. "These divisions reinforced the notion that primate society was driven by competition among dominant males who controlled territorial boundaries and maintained order among lesser males. Females (often studied with the young as a single reproductive unit) were described as dedicated mothers to small infants and sexually available to males in order to males dominance rank, but otherwise of little social significance."¹⁸ This image of males as the main active factor of human evolution was reinforced by the "man the hunter" theory, according to which men developed tools as hunting aids and language as a tool for communication needed for coordination of their activities. Men here are presented as the only heroes of the whole process of the evolution of human kind.
- Many research studies on presumed sex differences in mental, especially cognitive abilities in various fields (endocrinology, neurology, psychology) attempt to justify the belief that sex differences in cognitive abilities are to be explained merely biologically and in consequence, to justify existing gender inequalities on the bases of presumed biological differences. According to this paradigm, research accepts that there are significant sex differences in cognitive abilities which can be explained in terms of biological sex differences in the development, structure and functioning of the brain, while other factors, for example differences in the way male and female children are reared, are left intact and unexamined. As a biologist Ruth Bleier shows "since we do not know how or what brain structure and processes account for verbal fluency, mathematical skill, intelligence, or even consciousness, or for the enormous range of differences within any given population of people, such as any group of boys or girls, it is then not possible to explain sex differences in these processes."19 The impact of such research lies in naturalizing existing social differences and inequalities, rendering them unchangeable.

See Schiebinger, L.: Has Feminism Changed Science? Harvard University Press, 1999, pp. 113, 114.

¹⁸ Schiebinger p. 129.

¹⁹ Bleier, R.: Sex Differences Research: Science or Belief? In: Ruth Bleier (ed.), Feminist Approaches to Science. Teachers College, Columbia University, 1991, p. 158.



II. How to prepare a non-biased and gender sensitive research proposal

It has already been stated that the inclusion of gender dimension into research proposals cannot be done mechanically, e.g., only by setting up a research team including women scientists. Unfortunately, this is the way gender issues are sometimes viewed by researchers who apply for funding. Incorporating gender point of view into research projects depends on the very nature of each scientific discipline. If we try to conduct gender sensitive research, we have to take into account a specific subject of a particular science for it is easier to implement gender aspects into proposal that deals with societal problems than to include it into proposals from the field of IT or engineering. Nevertheless, any attempt to do gender sensitive and socially responsible research presupposes that applicants follow some general rules. According to the reflexive methodology developed by Marie-Claude Roland, the following issues, closely related with attempt to include gender dimension into research, are important:

- clearly raised and formulated research questions;
- □ identified research topic, objectives and, strategy;
- formulated methods and expected results or impact of the project;
- construction of scientific identity;
- awareness of ethical problems of the research itself;
- skills to communicate the research and its results to society.

If the description and formulation of a research proposal, abstract or project meet these criteria, it is possible to go one step further, e.g., to make the project gender sensitive. In analyzing a particular example adopted from a real proposal, we will pay attention to the issue of the research topic and objectives, the issue under development, the foreshadowed problem. Thus it is possible to follow the scheme:

topical issue; objectives; foreshadowed problem; issue under development; assertion.

²⁰ See http://www.reflexives-lpr.org/index-en.php



EXAMPLE I

FP6 priority 1.1.1. Genomics and Biotechnology for Health

Title of the proposal:

Magnetic Resonance Imaging evaluation in the human ageing with orientation to osteoporosis

Research subject for a potential FP6 project:

Osteoporosis poses a huge challenge to European society as the proportion of elderly people increases. The number of elderly people suffering from bone fracture is rising dramatically over the years. Consequently, there is a great need to develop accurate methods for diagnosing the level of fracture risk of an individual, to establish early diagnosis and to asses the clinical course of the diseases. The proposed FP6 project aims at developing an improved non-invasive imaging approach, integrating magnetic resonance at different resolutions, image analysis and numeric simulations, for the examination of trabecular bone and osteoporosis in ageing. Clinical evaluation of the proposed approach will be conducted at large scale on both patients who suffer from osteoporosis and healthy volunteers.

General objectives of the proposal are

- to tackle an issue of primary importance for the ageing of European population, i.e. bone related diseases such as osteoporosis;
- to integrate different disciplines and advanced technologies leading to improved non-invasive imaging approaches to the diagnose of osteoporosis.

Specific objectives are

- to design and develop improved MRI methods for quantitative evaluation of trabecular bone;
- to implement MRI methods on clinical whole-body MR scanners;
- to provide a large scale evaluation of the implemented methods in the clinical screening of osteoporosis.

There are visible problems with the scope of objectives and goals of the research project. In particular, the partial goals seem to be mixed with the approach and methods of the whole process. What the project describes as general objectives is a presupposition and motivation of the research project as well as suggestion of the process strategy.



The project refers to the social and medical difficulty related to the treatment of trabecular bone fracture and skeletal problems of the elderly, resulting in worsening their lives quality or in invalidity and immobility.

The research topic itself consists of design and development of non-invasive imaging approaches to the diagnosis of osteoporosis. The strategy is to integrate magnetic resonance at different resolutions, image analysis and numeric simulations, to enable examination of trabecular bone and osteoporosis of the elderly.

Even though it is clear that being a study on humans, the object, impact and application of the project outcomes are gender relevant, the project itself is written in a gender blind manner.

While, in the project description, the expected impact is clearly oriented at seniors and the costs of osteoporosis healing process and its subsequent effect on the life of seniors, the project itself does not differentiate between women and men.

This differentiation should be significant given the fact that almost every third woman suffers from osteoporosis due to the decrease of oestrogen, which has protective effect on the bone mass. The target group and clinical trial should then be designed and conducted with respect to the cause of osteoporosis- and trabecular bone fractures within a group of women and a group of men at the aged of 65 plus.

In the female and male groups, the causes of trabecular bone fracture are different, which should be taken into consideration when analyzing the results of preventive effect of the imaging method. Such approach could result in a different form of chosen preventive and healing therapy.

Change in individual life styles, reduction of caffeine intake, reduction of smoking, sufficient consummation of calcium and vitamin D might impact differently on the health needs of men or women.

Thus we can see how the project can be reformulated and gender dimension can be included into its content and impact.

Foreshadowed problem

It would also be highly important to evaluate suitability of such method for women in their reproductive age, who suffer from osteopenia (calcium absorption disorder). Similarly, it is also important to compare causes of fractures of men and women and evaluate the risk level with regards to their life-style (e.g., injuries caused by adrenaline sports, car-crash, etc.)



Assertion

The project is gender relevant and within a clearly articulated topic, research strategy, aims and objectives it is possible, at the level of content and planed outcomes, to consider the impact on the basis of gender.

EXAMPLE II

Promoting food safety through a new integrated risk analysis approach for foods

SAFE FOODS²¹

Project description

Risk analysis has three main components: risk assessment (scientific advice and information analysis), risk management (regulation and control), and risk communication. For consumers to have confidence in the food they buy and eat, it is necessary to access all the important information and to trust the risk analysis as a viable procedure ensuring that the food is safe and that the consumer can make her/his choice based on information provided. Risk analysis can help to solve the problem of a lack of consumer confidence in the safety of food, and restore trust. If risk analysis is applied to new processes in food production, such as changes in breeding programmes, potential dangers could be spotted before they become serious. It is vital not only to carry out such checks, but to take public opinion into account when accepting their conclusions to avoid food scares in the future. (SAFEFOODS)

Gender dimension of the research content

Defining the objectives

Question: Are there any hidden aspects involving gender roles and stereo-

types in your objectives?

Indicator: Objectives are defined according to different gender roles

The involvement of consumers in terms of their perception of risk and communication of risks related to food. Gender roles are relevant for the project because of different roles of women and men traditionally held with regard to food and

²¹ ftp://ftp.cordis.lu/pub/food/docs/biosoc_ip050804_en.pdf



consumption within families. The family cannot be taken as a unit, but broken down into its constituent parts and research on risk and consumption should be engendered.

Question: Are there any gender differences connected with your research subject?

Indicator: Detailed overview of linkages of your scientific fields and gender

Instead of thinking in terms of a universal consumer possible gender differences, for example in perception of "healthy" food or "risky" food, should be reflected. Therefore an overview of medical, economic and sociological literature is needed and should be carefully evaluated before the task is being formed.

Defining the tasks

Question: Do the tasks in your research involve human beings or population

as an object of your research?

Indicator: Detailed description of the target groups involved in your re-

search divided by gender directly or indirectly (i.e., through the $\,$

impact of your work)

The target group of the research consists of consumers who buy the food for themselves and for their families and who are at risk of diseases caused by unsafe food. These consumers are, of course, gendered beings, women and men with different gender roles, so the target group shouldn't be conceived of as a group of universal consumers.

Question: Are the differences between women and men expressed in your tasks?

Indicator: Tasks of the project are defined in terms of gender

Based on the overview of the literature, gender differences regarding safety requirements and standards should be directly addressed in the tasks. Special tasks concerning the evaluation of risk related to women should be added.

Selecting the methods

Question: Do the methods in your research involve human beings or popula-

tions?

Indicator: Gender sensitive methods which reflect the differences between

women and men are included in your research

In the research, the applied methods should be able to assess the differences in terms of gender. The project is interdisciplinary and this fact creates opportunities to apply various methods appropriate for capturing the gender dimension of the issue examined.



Question: Is the number of women and men in the sample used in the par-

ticular research activity balanced?

Indicator: Gender balance in the groups involved in the project (testing

groups, samples)

Impact on consumers should be assessed looking at impact on both groups - women and men. Therefore the samples included in the research should be gender balanced.

Question: Could you enrich your methods in the project by the inclusion of

gender dimension?

Indicator: Use of innovative methodologies to facilitate the inclusion of gen-

der dimension into the project

The broad focus of the project from medical and epidemiological assessment of risk to economic dimension of consumers' behaviour and their perception of the risk could not be completed without a proper gender assessment at all levels.

Defining the expected results

Question: Could there be any gender differences regarding the impact of

the research?

Indicator: Gender segregated results which reflect structural and functional

diversity of the society

When thinking about the quality of life or food, the views of consumers and their opportunities to select particular types of products and food are taken into consideration. Therefore assessing gender specific approaches to quality and safety will more specifically and clearly describe the situation in the population.

Question: Is the impact of results on gender considered in the project?

Indicator: Gender impact assessment of results is included

The expected results provided strategies and policies concerned with accessing quality food. These results should be evaluated from the gender impact point of view; without this the existing gender roles could create inequality between men and women. The different roles of women as pregnant or breastfeeding mothers and division of roles in families have to be reflected in the results. Therefore, the results dealing only with universal consumer are misleading.

Building the project team

Question: Is there a gender balance among the leaders of each participating

institution in your project?

Indicator: Number of women and men in the project team



The project is coordinated by men and in the sub-project the participation of women at leading positions is about 17% and about 16% at the position of scientific officers.

Question: Is there a balanced number of young and senior scientists both male and female.

Indicator: Number of young scientists both male and female in the project team

The information about participation of young scientists is not available.

Question: Is the gender balance in your team also reflected in the number of working hours?

Indicator: Number of working hours for men and women

Number of working hours for the participants should be balanced in terms of the participation of men and women.



CONCLUSION

Our efforts here are intended to help researchers reading this manual to adopt a gender sensitive approach in their project proposals, particularly those intended for submission to the European Commission funding streams.

By listing the questions to be asked, indicators to be used, and examples of projects funded under the European Commission's Framework Programmes, we try to show how to include gender dimension into research projects. Using approaches to eliminate gender inequalities makes us more sensitive when acknowledging the diversity in society. In the detailed analysis of project development the inclusion of the gender dimension aimed at identifying the challenge not just for equal opportunities but also for researchers to strive for excellence thereby increasing the competitiveness of their proposals.

To ensure equality between women and men in science not only in terms of their equal participation in research projects, but also in terms of building gender sensitive research will take many years and great efforts to achieve this. We are aware that for achieving the goal of gender equality in science much more effort is needed. We hope that this manual will contribute to the steps being taken by other projects and activities (e.g. GenderBasic), to making gender sensitivity in research a mainstream issue. We hope that this publication broadens the relatively narrow space given to gender and science issues.



REFERENCES

- Bleier, R.: Sex Differences Research: Science or Belief? In: Ruth Bleier (ed.), Feminist Approaches to Science. Teachers College, Columbia University, 1991
- 2. Denzin, N. K., Lincoln, Y. S. (eds.): Handbook of Qualitative Research. SAGE publications, 1994
- 3. Encyclopedia of Feminist Theories. Edited by Lorraine Code, Routledge 2000.
- 4. Harding, S.: The Science Question in Feminism, Ithaca and London: Cornell University Press, 1986
- 5. Human Arrangements. An Introduction to Sociology (second edition) by Allan G.Johnson, Harcourt Brace Jovanovich Publishers 1989
- 6. Kournay, J. A.: A New program for Philosophy of Science, in Many Voices, in: Janet A. Kournay, (ed.), Philosophy in a Feminist Voice. Critiques and Reconstructions, Princeton, New Jersey: Princeton University Press, 1998
- 7. Namenwirth, M.: Science Seen Through a Feminist Prism, in: Ruth Bleier (ed.), Feminist Approaches to Science, Teachers College, Columbia University, 1991
- 8. Schiebinger, L.: Has Feminism Changed Science? Harvard University Press, 1999
- 9. Women and Science: Making change happen. Proceedings of the conference. Brussels, April 3 to 4 2000, edited by A. Colosimo, B. Degen, N. Dewandre
- Women and Science. Proceedings of the conference. Brussels, April 28-29
 1998, edited by A. Colosimo and N. Dewandre
- 11. Gender and Excellence in the Making. European Commission, Directorate-General for Research, Brussels, 2004
- 12. Gender in Research. Gender Impact Assessment of the Specific Programmes of the Fifth Framework Programme. An overview compiled by Pia Laurila and Kerry Young, Bradley Dunbar Associates Ltd. Directorate-General for Research 2001
- 13. Women and Science: the gender dimension as leverage for reforming science. Commission Staff working Paper. Brussels, 15.5.2001



- 14. How Does Gender Gain A Footing in Research? Lisa Koenig, Ursula Brustmann, Federal Ministry of Education, Science and Culture. Working Group on Gender Mainstreaming, September 2004, Vienna.
- 15. Women and Science: Excellence and Innovation Gender Equality in Science. Commission Staff Working Document, Brussels 2005
- Science Policies in the European Union. Promoting Excellence Through Mainstreaming Gender Equality. A Report from the ETAN Expert Group on Women and Science. European Commission, 2000
- 17. 100 words for equality. A glossary of terms on equality between women and men. Available at http://ec.europa.eu/employment_social/gender_equality/docs/glossary/glossary_en.pdf



BRIEF GLOSSARY OF GENDER TERMS

The task of this glossary is to provide concise definitions of the relevant gender terms for projects applicants who are not familiar with gender analysis and do not have particular gender expertise. The glossary has been compiled and re-written on the basis of several sources, mainly the Encyclopedia of Feminist Theories, 100 words for equality and Human Arrangements. An Introduction to Sociology (second edition). See references.

Data collection bias

Bias in data collection concerns what information is sought, from whom and under what circumstances. Due to this bias, certain methods of data collection are underdeveloped, and some information remains invisible and undocumented. Bias can take place in the design of the study and interpretation of results.

Division of labour

The gendered division of labour refers to a set of norms, values, practices, and rules in the field of work where an asymmetrical distinction is produced. This distinction is shown between women and men with regard to the segregation in occupation, between paid and unpaid work, female and male tasks and professions. The connection between femininity and masculinity in an occupation and its status is very strong. Both vertical and horizontal segregation leads to a gender pay gap.

Double burden

This term refers to the dual oppression experienced by women who are at the same time both paid labour force and unpaid home-makers, and mothers.

Femininity/masculinity

Male and female are statuses to which gender roles of behaviour and appearance are ascribed. People, regardless age, class or gender, generally agree that masculinity describes people who are aggressive, strong, independent, rational, dominant, active, competitive, reluctant to show their emotions; conversely femininity describes people who are emotionally excitable, weak, vulnerable, submissive, noncompetitive, passive, and intuitive.



Gender

A concept that refers to social differences between women and men that have been learned, are changeable over time and have wide variations both within and between cultures. Simone de Beauvoir has articulated the modern usage of gender as distinct from sex when she says "One is not born but rather becomes a woman".

Gender analysis

The essence of gender analysis means that we take into account the different needs and experiences of men and women as a research tool. This kind of analysis shows many concepts, scientific statements, norms, values, attitudes which are considered objective, inter-subjective and neutral, in fact reflecting the perspective of men.

Gender bias

This concept can be understood as the often unintentional and implicit differentiation between men and women situating one gender in a hierarchical position to the other, as a result of stereotypical images of masculinity and femininity steering the assessment and selection process or the gendered structure of the scientific system.

Gender blind

An approach ignoring the gender dimension or differences between men and women. Gender blind policies implicitly reproduce masculine norms and ways of behaviour.

Gender equality

This term refers to circumstances or situations in which all human beings are free to develop their capacities and abilities and can make choices without restrictions based on gender roles. Different aspirations, values and ways of behaviour are valued equally.

Gender gap

This term refers to the gap between women and men in terms of their level of participation in any area. In the fields of science it refers to an under-representation of women scientists at top academic positions.

Gender impact

The assessing of any proposal or output, with regard to relevant differences (for instance different aspirations, values, needs, etc.) between women and men, aiming at promotion of gender equality.



Gender mainstreaming

The process of assessing the involvement of women and men in any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and to ensure that inequality is not perpetuated.

Gender roles

This concept refers to social practices connected with masculinity and femininity as social constructions related to sex. Gender roles define expectations for males and females relating to masculine and feminine traits. Roles have a coercive power over people because rewards and punishments depend on how they are fulfilled. We also use them as means of "orientation" among other people. Gender roles affect our status sets and thus our identities.

Gender segregation

Horizontal segregation means rates of concentration of men and women in certain occupations or disciplines and vertical segregation concerns the position of women and men within the scientific hierarchy.

Gender sensitive

An approach which takes into account the differences and specific needs of both men and women aiming to eliminate inequalities and promote an equal distribution of resources.

Gender stereotyping

Generally a stereotype refers to holding a rigid, oversimplified belief that is applied to all members of a group or social category. At the heart of any culture there are beliefs which we use to define reality, and these include gender stereotypes: for instance men are less emotional than women, women are "naturally" better parents and care more about home-making than men, etc. Gender stereotypes are linked with concepts of masculinity and femininity, which portray a vision of the "true" nature of females and males. Gender stereotyping is strongly related to cultural values.

Glass ceiling

This is the invisible barrier that has prevented women and minorities from being proportionally represented in top positions. This barrier refers to invisible obstacles to career progress. Even women who succeed in breaking the glass ceiling can



perceive and experience the glass walls that continues to separate them from the top executive board (a phenomenon identified and described by Ann Morrison in 1987).

Leaky pipeline

This term refers to the gradual flow of women away from science during the career path. Even though there is an equal number of women and men found in higher education, the numbers and presence in senior positions decreases the further up the hierarchy we look.

Science

Science is not only a system of knowledge and methods but a social institution responsible for creating reliable and verifiable true knowledge about the world. As an institution it provides a cultural pattern that defines legitimate subjects for research, acceptable methods of seeking knowledge, and standards and criteria for evaluation and interpretion data and received results. Science is a complex social process that affects all aspects of social life with both positive and negative results. In order to establish equality for women in science, essential changes have to take place within society.

Sex and gender

The term "sex", refers to biological differences that define human beings as female or male. These differences occur due to the fact that while males possess an X and Y pair of chromosomes, females have a pair consisting of two X chromosomes. However, being a male or a female involves more than just biology; biological sex is accompanied by social and cultural differences between women and men expressed by the term "gender".



Checklist of questions and indicators

Gender dimension of the research content	Indicator		
Defining the objectives			
Are there hidden aspects involving gender roles and stereotypes in your goals?	Priorities take into account different gender roles and stereotypes		
Are there any gender differences connected to your research subject?	Detailed overview of linkages of your scientific fields and gender		
Definina	the tasks		
Do the tasks in your research involve human beings or population as an object of your research?	Detailed description of the target groups involved in your research divided by gender		
Are these differences between women and men expressed in your tasks?	Tasks of project are defined in terms of gender		
Selecting	methods		
Do the methods in your research involve human beings or population?	Gender sensitive methods, which reflect gender differences are included in your re- search		
Is there a balance of men and women in the sample population of the research project?	Gender balance in the groups involved in the project (e.g. testing groups or samples)		
Defining the expected results			
Could different impacts on women and men be anticipated in your research?	Gender segregated conclusions, which re- flect structural and functional diversity in society		
Is the impact of results on gender considered in the project?	Gender impact assessment of conclusions is included		

Building the research team

Number of women and men in the project

Number of young male/female researchers

Number of working hours for men and

in the project team

women

Is there a gender balance between the lead-

ers of each participating institution in your

Is there a balanced number of young and

senior researchers, both men and women?

also in the number of working hours?

Is the gender balance in your team reflected

[41