1. EU objectives for gender equality in research

Three objectives underpin the European Commission's strategy on gender equality in research and innovation policy:

1. **fostering equality in scientific careers;**
2. **ensuring gender balance in decision-making processes and bodies;**
3. **integrating the gender dimension in research and innovation content.**

As laid out in the European Commission's *Communication for a reinforced European research area* (2012), **EU Member States** are encouraged to:

1. create a legal and policy environment and provide incentives to:
   (a) remove legal and other barriers to the recruitment, retention and career progression of female researchers while fully complying with EU law on gender equality (Directive 2006/54/EC);
   (b) address gender imbalances in decision-making processes;
   (c) strengthen the gender dimension in research programmes.
2. engage in partnerships with funding agencies, research organisations and universities to foster cultural and institutional change on gender — charters, performance agreements and awards;
3. ensure that at least 40 % of the under-represented sex participates in committees involved in recruitment/career progression and in establishing and evaluating research programmes.

The *Council conclusions on advancing gender equality in the European research area* (adopted in 2015) reiterate the need to foster sustainable cultural and institutional change in the European research area (ERA) national action plans or strategies at the level of Member States and research institutions.

The Council also invites **EU Member States** and **research funding organisations** to provide incentives to encourage **higher education institutions and research organisations** to revise or develop gender-mainstreaming strategies and/or gender equality plans (GEPs) and to mobilise adequate resources.

The Council calls in particular for:

1. guiding targets in decision-making bodies, such as leading scientific and administrative boards, recruitment and promotion committees and evaluation panels, to achieve gender balance in leadership and decision-making positions;
2. guiding targets for a more even gender balance of full professors in higher education institutions;
3. monitoring, with appropriate indicators, the implementation of gender policies, and actions at institutional, national and EU level;
4. gender awareness-raising and capacity-building tools in order to achieve institutional change;
5. flexible and family-friendly working conditions and arrangements for both women and men;
6. reviewing the assessment of researchers' performance, to eliminate gender bias.

2. Structural change in the research area

2.1 What is it?

Institutional change is a strategy aimed at removing the obstacles to gender equality that are inherent in the research system itself, and at adapting institutional practices. Within an institutional change approach, the focus is on the organisation.

In the ERA, research organisations and higher education institutions are invited to implement institutional change relating to human resources management, funding, decision-making and research programmes. The main objectives of institutional change are to enhance women's representation and retention at all levels of their scientific careers and to promote the integration of the gender dimension in research and innovation content.

2.2 Why is it necessary?

Both **women and men are working in research organisations and higher education institutions,** and they take up distinct roles, such as conducting research, teaching, managing staff and structures, or implementing procedures. At the same time, **research and higher education institutions also work for people**. While higher education institutions contribute to training future female and male professionals, research organisations investigate a diverse spectrum of topics that affect the lives of women and men.

To address structural (re-)production of inequalities in research and higher education institutions, it is crucial to identify and act upon the mechanisms that need to be changed. Nevertheless, carrying out isolated actions will not be as effective as addressing the structure as a whole through comprehensive and holistic approaches. Institutional change is needed because it will be beneficial to the organisation as a whole, and to society more generally. Several mechanisms tend to (re-)produce inequalities in research institutions.

Research and higher education institutions as gendered settings

There is strong evidence in literature and statistics that research and higher education institutions reproduce social values leading to gender bias/discrimination (as with many other spheres in society). Women and men tend to concentrate in certain scientific fields (horizontal segregation). For instance, while women are more likely to be found in fields like social sciences and humanities, men are more inclined to study, teach and/or research topics related to engineering or technology. The stereotypical subject choices of students are therefore a real concern. Top hierarchical positions are more frequently occupied by men (vertical segregation). In addition, research and teaching often seem to disregard the important gender dimension in their approach, content and analysis. The result is that the viewpoints, experiences and needs of half the population risk being overlooked or dismissed. This in turn leads to products, services and policies that are less than optimal because they are targeted at and serve only a proportion of society.

Unconscious or implicit gender bias

'Unconscious bias is when we make judgments or decisions on the basis of our prior experience, our own personal deep-seated thought patterns, assumptions or interpretations, and we are not aware that we are doing it,' explains Professor Uta Frith in a briefing note on unconscious bias from the Royal Society (the scientific academy from the UK and the Commonwealth). Unconscious or implicit bias is critical and problematic when it is at play in the assessment and evaluation of people (for example for election to posts or positions, fellowships and awards, etc.) because it impedes an objective and fair judgement. As the name makes clear, people might hold biases that they are not conscious of, however there are techniques to raise awareness and to act upon them.

Masculine image of science

From an early age, we learn to associate science with men. This topic has been extensively researched throughout the last decades. As shown in a recent study covering 66 countries worldwide (Miller, Eagly and Linn, 2014), there are strong relationships between women's representation in science and national gender-science stereotypes, meaning that men tend to be more associated with science than women. This finding also holds true for countries where women were approximately half of the nation's science majors and employed researchers.

Women in research and higher education institutions: the numbers are improving, but why so slow?

According to the latest European Commission *She figures handbook*, in 2012 only 33 % of European researchers were women. This percentage tends to be even lower in typically male-dominated fields. Throughout the years, *She figures* has also provided evidence that women have been historically under-represented at the head of higher education institutions. These findings are utterly disappointing as, in 2012, the percentage of female European PhD graduates amounted to 47 %.

Nevertheless, it is worth highlighting the progress achieved during the last 10 years. As indicated in *She figures 2015*, the share of women PhD graduates rose from 43 % in 2004 to 47 % in 2014. The share of women at the top level of an academic career rose from 18 % in 2007 to 21 % in 2013. The share of women heads of higher education institutions rose from 15.5 % in 2010 to 20 % in 2014.

More recently, it could also be noticed that the number of women researchers grew faster than the number of men. A similar trend is noted for the number of women scientists and engineers. Women scientists are catching up with men, but the progress is still too slow. The share of women in the top grade of a scientific career is only 20 %, as is the share of women heads of universities.

We are on the right track but it is not the time to rest. It is time to accelerate the process and finally make sure that all our women scientists get the career they deserve.

Gender-blind and gender-biased research

Much research is still **gender-blind** or **gender-biased**. This happens, for instance, when research results are extrapolated to the population as a whole, without due consideration of the sample composition. For example, in medical research it often happens that only male animals are used for tests.

Sex and gender are fundamental determinants of the organisation of life and society. Therefore, recognising and taking into account these differences is paramount in scientific knowledge creation.

2.3 The Gender Equality Plan as a tool for structural change

In the specific context of research organisations and higher education institutions, the European Commission considers a **Gender Equality Plan** as a set of actions aimed at:

1. conducting impact assessment/audits of procedures and practices to identify gender bias;

2. identifying and implementing innovative strategies to correct any bias;

3. setting targets and monitoring progress via indicators ([1]).

([1]) Source: European Commission communication on *A reinforced European research area partnership for excellence and growth* (COM(2012) 92 final) http://ec.europa.eu/transparency/regdoc/rep/1/2012/EN/1-2012-392-EN-F1-1.Pdf

The scope of a GEP may strongly vary, depending on the type of research-performing organisation, the institutional context in which it is implemented, the disciplines addressed or the type of gender biases and inequalities identified as part of the diagnosis.

A GEP can be broken up into different steps or phases, each requiring specific types of interventions.

1. **An analysis phase**, in which sex-disaggregated data is collected; procedures, processes and practices are critically assessed with a view to detecting gender inequalities and gender bias.

2. **A planning phase**, in which objectives are defined, targets are set, actions and measures to remedy the identified problems are decided, resources and responsibilities are attributed and timelines are agreed upon.

3. **An implementation phase**, in which activities are implemented and outreach efforts are undertaken so as to gradually expand the network of stakeholders.

4. **A monitoring phase,** in which the process and the progress are regularly followed up on and assessed. Findings from the monitoring exercise(s) allow adjustment and improvement measures and activities, so that the results can be optimised.

This set of actions, which can have different degrees of complexity, is meant to articulate a strategic view aimed at achieving gender equality. Initiatives such as adopting general gender equality objectives do not constitute per se a gender equality strategy/plan, as these commitments have to materialise into a concrete set of steps and actions to be undertaken. For the same reason, a broader diversity or anti-discrimination strategy and/or plan addressing gender among other issues, should not automatically equal to having a Gender Equality Plan. If such a strategy does not rely upon sufficient data on gender, and only addresses gender through a limited number of measures and indicators, it is unlikely that gender equality will actually be achieved.

The way gender biases and inequalities themselves are being addressed can also vary, along with the chosen approach and the availability of internal or external gender expertise. Recently, gender bias and inequalities have been increasingly addressed taking into account their intersection with other inequality grounds such as disability, age, sexual orientation, religion or ethnicity. Addressing other inequalities intersecting with gender may offer efficient leverages for change and can also inspire comprehensive actions and strategies. Yet, it also requires more analytical resources, data and a broader range of expertise than tackling gender separately from other inequality grounds.