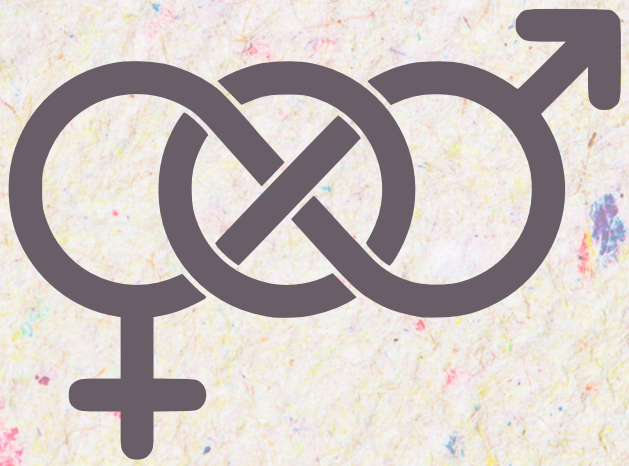
GUIDE

INTEGRATING THE GENDER DIMENSION IN R&I

A priority to meet **Research Excellence** criteria in the project cycle



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CALIPER
Gender Equality in STEM Research

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Authorship & Graphic Design : Indra Weber
Supervision : Sara Aguirre & Laurent Licata
Research Assistance & Graphic Design : Lucie Guilmot-Culliford
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Content

Why this resource & for whom is this guide?

This guide is intended for **researchers seeking to integrate the gender dimension** in their scientific work and funding proposals and thus enhance the societal relevance as well as excellence of their work.

This resource:

1. Seeks to **raise awareness** about the significance of the gender dimension in research and to assist researchers to expand their understanding of the topic and its **key concepts.**
2. Proposes **practical tools** to successfully apply gender-sensitivity at different stages of the research cycle.
3. Provides **support for the preparation of funding applications,** in alignment with new EU award and selection criteria, to create added value by enhancing excellence and societal relevance of research and innovation content created.

The **gender dimension is an umbrella term** referring to integration of sex/gender analysis methods in the R&I cycle from design to content. It implies analysing and taking into account possible differences between men and women, or males and females (biological characteristics as well as the socio-cultural features), in the content of the project (1).

Over the past years, the gender dimension in research content has received increased attention, promoting the goal that integrating sex and gender analysis increases the quality of research and innovation. The European commission as well as national funding bodies are taking concrete steps encouraging researchers to give greater attention to gender. While the European Research and Innovation funding Program – **Horizon Europe – now formally strengthens the link of the gender dimension as an mandatory 'award criterion' for research excellence.** This guide provides a tool to help practitioners successfully understand and respond to new developments in the funding landscape.

What is the structure of this guide?

- Chapter one comprises an overview of **key concepts that are essential to understanding different factors impacting the gender dimension** - concepts as sex, gender and intersectionality are elaborated and attention is called to stereotypes and implicit biases that may influence the value of research.
- The following section emphasises **'why the gender dimension matters'**, and elaborates the gender dimension as a **European excellence criterion**, that is strengthened in selection and award process for funding proposals
- The third chapter provides a **set of practical tools, approaches, and advice** that can be applied in the project cycle, to successfully implement the gender dimension.
- Chapter four addresses how the gender dimension is taken up concretely in **EU funding proposal applications and provides instructions.** Also, a brief overview is provided of application criteria adopted by a selection of Belgian national funding bodies.
- At the end, a **checklist with key questions** can be found, as well as further resources to help deepen understanding.

Key concepts

you can't miss when addressing the gender dimension

This section builds a better understanding of the **central concepts that need to be taken into consideration when working on integrating the gender dimension** in research content. Researchers must be mindful to consider different concepts of sex, gender and intersectionality as well as gender stereotypes and unconscious biases, to be able to adequately address gender dynamics in their projects.

1. Sex and Gender

Sex

Refers to **biological characteristics** (including genetic, hormonal, physiological, anatomical) that distinguish between male, female, and intersex (in humans) or hermaphrodite (in non-human animals) (2). In human biology, sex denotes the biological attributes that differentiate individuals as male, female, or intersex. For example, in the realm of engineering and product design research, sex encompasses anatomical and physiological characteristics that may impact the development of products, systems, and processes (2).

Gender

Encompasses sociocultural norms, identities, and relationships that organise societies and institutions, influencing behaviours, products, technologies, environments, and knowledge. Gender norms change over time, as do cultural norms and values (2). It is an organising principle that forms behaviours, attitudes, physical appearance and habits (2). Generally, gender is defined in three dimensions: **gender norms** (socio-cultural norms dictating what is deemed suitable for women, men, or those who identify as gender-diverse, frequently leaning on stereotypes associated with gender); **gender identities** (how individuals or collectives perceive and portray themselves in relations to gender norms typically involve common categories such as woman, man, and non-binary or gender-diverse identities); **gender relations** (how gender and sex shape social interactions) (3).

Including the gender dimension in research implies analysing and taking into account **both sex and gender in the whole research & innovation process** (1) , considering the differences in biological characteristics as well as social and cultural features associated with gender (4). The gender dimension plays a **significant role in various stages of the R&I cycle:** this ranges from disclosing the sex of cells in experiments to addressing the requirements of women, men, and gender-diverse individuals as end-users of technological innovations (4).

2. Be mindful... Gender is a spectrum

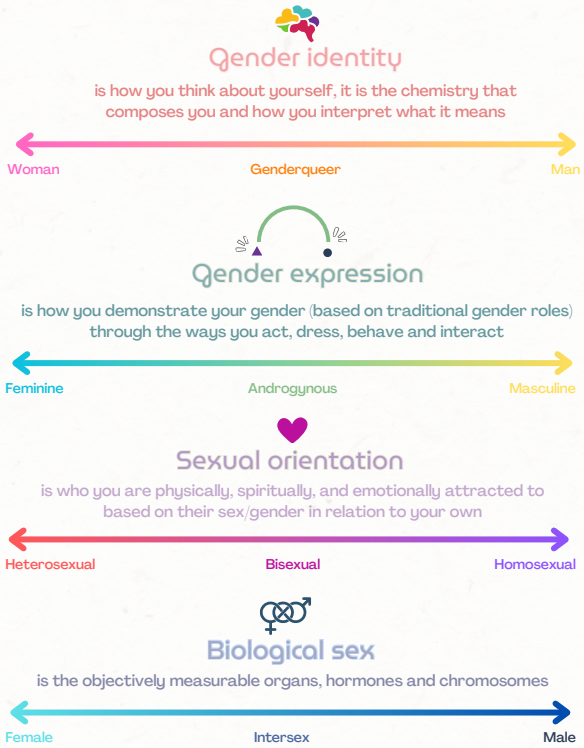
Be mindful that sex and gender are not binary but are defined on a spectrum between 'feminine' and 'masculine'. The more attention you can pay to nuances on this spectrum, the more gender sensitive research outcomes will be, capable of reaching more people with diverse needs and increasing the societal relevance of the research in question. The transposition of this spectrum into research will depend on the specific discipline and topic.

However, some recommendations (5) below are proposed to take into account the gender spectrum:

- ✔ Use and report, nonbinary gender measures.
- ✔ Report the prevalence of nonbinary participants.
- ✔ Clarify their inclusion and treatment in analysis.
- ✔ Use gender inclusive language (beyond the binary)

A systematic review of terminology of non-binary gender identities can be found here.

The gender spectrum



Definitions source: it's pronounced metrosexual ,2020

Try this 'BRAIN TEASER': experiment from Boston University

Read the scenario below and answer the question - make sure to give yourself time to answer before reading past the paragraph:

A father and son are in a horrible car crash that ends in the death of the dad. The son is rushed to the hospital; just as he's about to go under the knife, the surgeon says, "I can't operate — that boy is my son!"

How can this be?! Explain your answer.

Take a few minutes to reflect, only then read further! [jot down your answer on a piece of paper]

> *Did you infer that the surgeon could be the child's mother, the boy's gay, second father or a non-binary parent? If not, you are part of a majority whose unconscious biases comes to the forefront here: the assumption that the surgeon needs to be a man and/or that parental couples are formed by a man and a woman.*

You have just been part of an experiment conducted at Boston University that reveals deep gender biases.
What do you think made imagining the mother as the surgeon so difficult? Gender schemas are uncovered – which are generalisations that help people make sense of complex environments.
This research showed that *'even young people and self-identified feminists tended to overlook the possibility that the surgeon in the riddle was a she'* (6). Only a small minority of participants [14% of students; 15% of children] came up with the answer that the mother was the surgeon (6).

Society continues to contribute to gender stereotyping, transmits gender roles and shapes opportunities and expectations for both genders, where research endeavours can be significantly influenced by these. Research shows this in various spheres like organisations, video games, academia, medicine, (7).

3. Stereotypes & biases matter

Underlying **gender stereotypes** should be paid attention to, which are over-generalisations of existing social patterns. They spring from certain historical, cultural and social contexts and are deeply ingrained on our societies and consciousness. Gender stereotypes, being generalised beliefs, often result in unjust treatment and discrimination: individuals are unfairly treated based on preconceived notions rather than factual understanding of individual cases. To identify and prevent gender-based discrimination, the presence of stereotypes needs to be acknowledged - understanding where they manifest in daily life, how they influence decisions, and their role in perpetuating discrimination is essential (7).

Traditional gender stereotypes may be:

- He is focused on his career, he is strong, rational and the breadwinner.
- She is emotional, kind, a mother and/or in charge of caring tasks, prioritises family over career.
- Science is associated with male competences more than with female (8).

Unconscious/implicit biases, need to be rendered conscious

It is important to understand that we all hold biases - often without intention and convey stereotypes unconsciously. Unconscious biases are pre-existing mental associations and part of the normal cognitive functioning of our working memory. They exert influence over our understanding, actions, and decisions in an unconscious manner (9). They influence judgements and opinions about others based on stereotypes (9). 'Gender bias' refers to the conscious or unconscious preference for, or prejudice against, a gender category over another (4) resulting in discrimination.

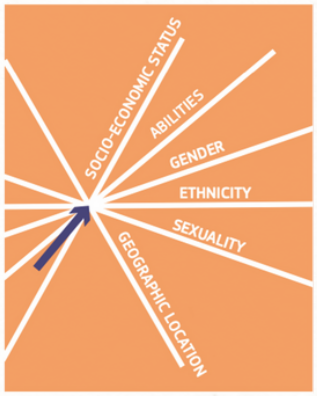
Women and gender-diverse people are underrepresented in research content for multiple reasons stemming from gender biases and stereotypes around people's skills and role in society (10). Attention must be paid to acknowledge this in our research approach, content, or results and to be conscious about implicit biases.

4. There is more at the 'intersection' of gender

Intersectionality

Entails examining gender within the context of intersections with factors such as class, migration background, ability levels, gender identity, sexual orientation, age, and more (4).

The intersection of those factors "shape a person's experience and social opportunities, thereby influencing the form of discrimination and inequality they encounter" (4). Gender identities, gender norms and gender relations shape and are shaped by other social attributes. That is why **researchers should try to go beyond considering gender as an isolated factor**. Intersectionality expands the gender perspective by considering its interaction with other dimensions, and widens the objective to understand how different characteristics contribute to unique experiences of discrimination and disadvantage (12).



[Source : Gendered Innovations 2 – How Inclusive Analysis Contributes to Research and Innovation : Policy Review (July 2020)]

Below, a few resources that can help researchers further address intersectionality in their projects:

- *Gendered innovations - Intersectional Approaches in the research cycle*
- *Intersectionality in research design using qualitative interviews*
- *Sociolinguistic research -Integrating Intersectionality in Language, Gender, and Sexuality*
- *Intersectionality in quantitative Psychological Research*
- *Intersectionality in qualitative Health Research*
- *Gender, inclusion, intersectionality in Sustainability Research*
- *Intersectionality lens to expand equity in the Geosciences*

To find out how you can apply these key concepts to your research/project cycle, see Chapter 3 – Tools.

If you have time ... dive into this quick exercise

For each scenario, choose a protagonist from the list below as quickly as possible, and complete the sentence (11). Each subject can only be used once:

The nurse | **Dominique** | **The minister** | **My sister** | **The mother** | **The boy** | **She** | **The man**

..... needs several attempts before parking the car properly.
..... is one of the best musicians in the world.
..... is very studious.
..... is very tactful.
..... and his wife go for a walk.
..... is rebellious in class.
..... tidies up the children's room.
..... likes another guy.

Why the gender dimension in the research cycle matters?

Research Excellence

Enhanced excellence, accuracy, and societal relevance

Integrating the gender dimension in research:
Bringing into play factors of sex, gender and other intersecting dimensions throughout the research and innovation cycle, from start to finish, enables added value in terms of research excellence; the emergence of new creative opportunities; and it significantly promotes an in-depth understanding and consideration for diverse needs, behaviours, and attitudes of citizens.

The goal is to create solutions, research, knowledge, technologies and innovations of enhanced societal relevance and to enlarge scientific knowledge (4). It also assumes that the 'average citizen' does not exist, and that people are different in terms of sex, gender, as well as further intersectional dimensions. The gender dimension is also relevant when research on 'living beings/organisms' [e.g. biology] is concerned, whose results will have a connection/be applied to humans.

Ignoring or failing to consider a gender-sensitive approach in relevant studies will create incomplete and biased research that draws generalised conclusions based on partial data (13).

Evidently, the gender dimension is not a 'one fits all' generalized approach that can or should be applied blindly by default, across all research designs, due to the nature of the research topic, case, and question at hand. As a rule of thumb – a gender perspective should be applied when a research question concerns/impacts directly or indirectly human beings. It is important for researchers to critically reflect on the topic, to discern the true relevance of the gender dimension to their work and its impact that is at stake.

A strong case for "gendered innovations"

Examples illustrating the importance of inclusive research design

There are countless research cases where a gender-blind approach would have significantly reduced the impact of research and even further led to markable harmful consequences on different types of communities.

Heart Attack Awareness: Unveiling Gender Disparities in Symptoms and Diagnosis
Historically, medical research heavily relied on data gathered primarily from male subjects. The effects of this bias reveal themselves in the conception that classical symptoms associated with heart attacks are characterised by intense pain in the heart region that extends to the left shoulder, down the left arm.

- However, approximately 20% of women experience distinctly different symptoms, such as shortness of breath, stabbing pain radiating to the jaw and neck, and nausea.
- Due to an absence of awareness, women often delay seeking medical attention in acute cases, resulting in significantly delayed hospital admissions.
- Moreover, women are four times more likely to be discharged from the hospital without a proper diagnosis compared to men exhibiting classic symptoms.

To learn more about this : Acute Myocardial Infarction in Women - A Scientific Statement From the American Heart Association (Mehta 2016 – cited 1205 times).

Behind the Wheel: The Gender Gap in Crash Safety

Although men constitute most fatalities in car accidents, studies indicate that female drivers or front passengers wearing seatbelts are approximately 17% more likely to succumb to injuries in a crash.

- This stark contrast is largely attributed to the historical use of crash test dummies modelled after male anatomy, neglecting to account for the specific risks faced by women.
- The integration of female crash dummies into safety testing protocols is a relatively recent development (around 2003).
- However, these dummies still fail to accurately represent the population, with some researchers suggesting they resemble more of a 12-13-year-old girl rather than an adult woman. The absence of gender-sensitive vehicle safety standards leaves women disproportionately vulnerable to severe injuries or fatalities on the road.

To learn more: The Crash Test Bias: How Man-Focused Testing Puts Female Drivers at Risk, by Keith Barry (2019).

Research tested how recent model year (MY) light vehicles with advanced occupant protection technologies compare to older vehicles in terms of female fatality risk and showed that advances in crash testing associated with regulations and consumer metric programs, has led to the incorporation countermeasures that have lowered female fatality risk. To learn more: Female crash fatality risk relative to males for similar physical impacts (14).

DID YOU KNOW ? (3)

- Many aspects of taxation have a substantial effect on gender-related socioeconomic inequalities, but when designing tax laws, policymakers still rarely consider gender inequalities.
- Climate change is affecting sex determination in several marine species and that certain populations are now at risk of extinction.
- Differences between women and men in infection levels and mortality rates were observed in the COVID-19 pandemic.
- Household travel surveys, mobility analysis and transport planning, underrate trips performed as part of 'caring work', which are predominantly undertaken by women.

For further inspiration, see this **MSCA video** explaining the gender dimension and examples of applied research.

How the gender dimension is gaining support

The importance of integrating the gender dimension in research has gained growing support over the years in European policy frameworks for research and innovation. The current funding program Horizon Europe clearly reaffirms this commitment to gender equality in R&I, by setting it as a crosscutting principle, introducing strengthened provisions, and further seeking to meet the 5th UN' Sustainability Development Goal, to ''achieve gender equality and empower all women and girls.''

Gender has become an area of **frontier research** and those who chose to adopt gender sensitive explorations in their work, can be at forefront of this movement to create novel solutions of enhanced societal impact.

There has been growing recognition that research acts as a highly effective catalyst for progress and innovation and universities have been increasingly acknowledging their role in supporting the development of a skilled and diverse workforce as well as fostering more societally relevant research that can meet the challenges of modern society. GenderNet is a **network of European funding agencies** committed to promote collaboration among funding organisations to integrate the gender dimension into their programs and evaluation criteria.
Also funding bodies at national level are starting to introduce criteria around gender dimensions in their funding application procedures. [See CH 4]

Journals and editors, ranging from the life sciences, medicine, social science, psychology, economics, and policy, have also been increasing their support for gender sensitive research. More life sciences journals now pay attention that sex/gender effects are considered in their selection processes. Science journals in various disciplines have been promoting gender diversity and inclusivity and encouraging authors to consider gender-related implications in their studies (15,16). Others actively publish on gender bias and inclusion in science and academia, and promote gender equality in STEM fields (17–20) .

Yet, fundamental challenges persist until mainstreaming of gender sensitive research across all disciplines is sufficiently reached. Although gender equality in research careers themselves has improved, it is yet far from achieved (10). Particularly, the STEM disciplines (Science, Technology, Engineering, Mathematics) broadly show an absence of gender-sensitivity, while at the same time these fields are a driving force for future innovation, technological and scientific progress, and hold one of the largest and fastest growing funding packages for research.

State of play – can you find the gender dimension in R&I?

The EU 'She Figures' uses the latest available statistics to regularly monitor the state of gender equality in R&I across Europe and beyond. Results systematically reaffirm continuing gender inequalities in the R&I ecosystem and that divergences exist between the adoption and implementation of policies at the EU, national, and institutional levels (21) .

The She Figures 2021 report shows that the integration of the gender dimension in R&I content is rare. Between 2015-2019, **fewer than 2% of publications** across all disciplines[1] and **only 1.7% of EU-funded projects under Horizon 2020** integrated a gender dimension in their research and innovation content (10).

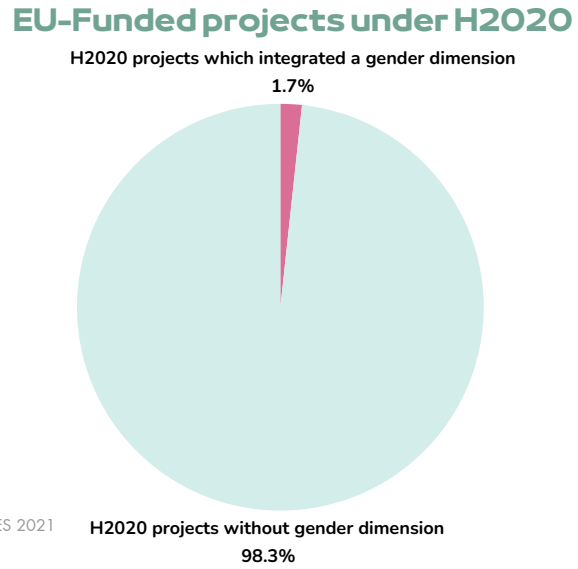


FIGURE 1 Data source : European Union SHE FIGURES 2021

When looking at the representation of the **gender dimension across different disciplinary levels, STEM projects very rarely mobilise a gender-sensitive approach** (13). She Figures 2021 reveals that publications in the Medical & Health sciences, followed by social sciences, were most likely to contain a gender dimension, while publications in Engineering & Technology were least likely (10).

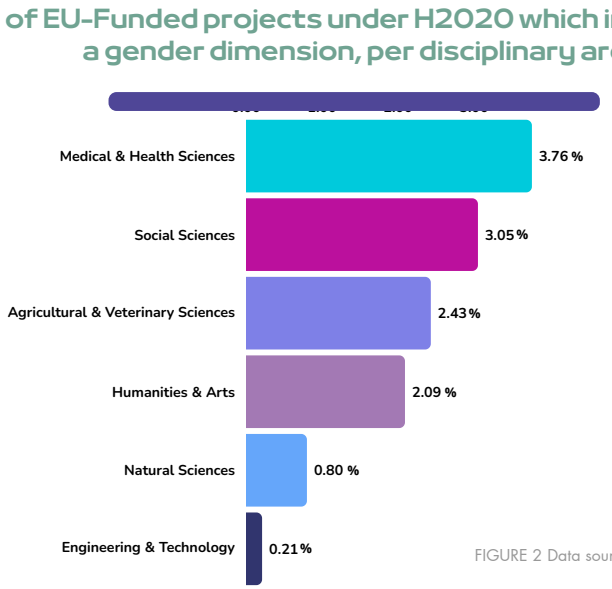
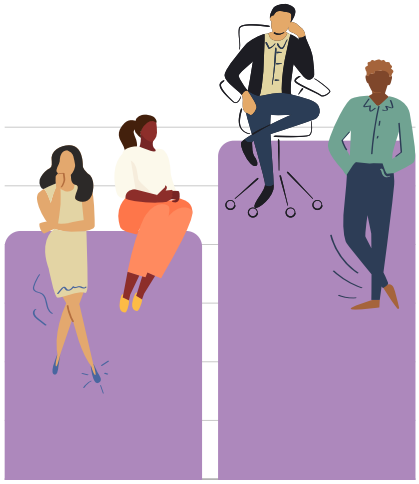


FIGURE 2 Data source : European Union SHE FIGURES 2021

Although the mission of any scientific endeavour is to produce 'neutrality' in results, science is often not 'impartial'. **1. the gender diversity of people performing the research** and **2. gender considerations in research content** itself, influence research design and implementation to promote excellence and creativity. **Women's representation in academia** and funding success rates can be seen as a direct and valuable indicator/proxy for persisting disparities and a contributing factor to the general absence of the gender dimension across research fields. **The less diversity of people that are engaged and represented in the research cycle, the more the chances rise of a loss of intellectual capacity** and cross cutting dialogue that is inclusive and represents diverse interests. Studies show ''gender inequalities have influenced the outcomes of research on a large scale, particularly (but not only) in life sciences, which still often neglect women in research design'' (22). Evidence suggests that **gender diverse teams perform to a higher degree across scientific fields**. So called 'Gendered Innovations'[1] seek to foster research excellence through building inclusive academic communities in which all genders and diverse people contribute equally at all stages and echelons of decision making and the research cycle (23).

[1] See Stanford Gendered Innovations and EU Gendered Innovations 2



Women's Representation in Academia

FIGURE 3 Data source : European Union SHE FIGURES 2021

Women remain **underrepresented at the highest levels of academia** (23).

Moreover, there are more male **active authors** than female. While gender parity is almost reached among early-stage authors, the gender gap widens to twice as many men, as seniority levels increase and the STEM fields are most impacted.(10) Additionally, women are **under-represented in authorship teams**, averaging around 30% (2015-2019), and remain a clear minority particularly in international teams.

Ratio of women to men active authors, per disciplinary levels & seniority levels

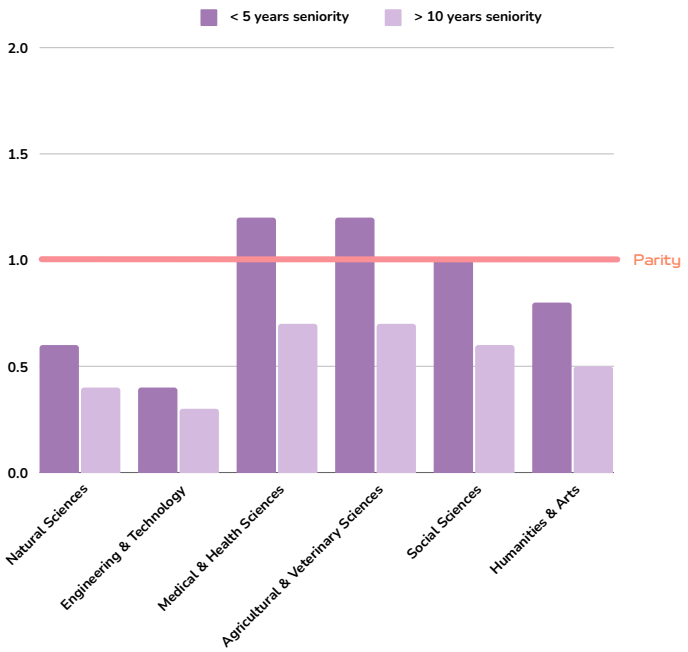
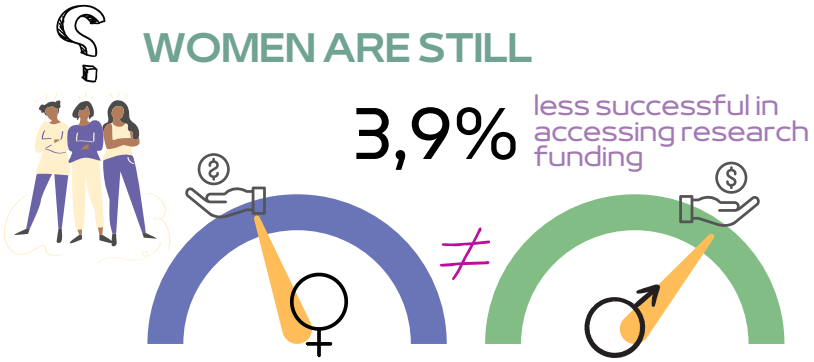


FIGURE 4 Data source : European Union SHE FIGURES 2021



The level of 'Research funding' is **still unevenly distributed among genders**. STEM projects, predominantly supervised by male researchers, obtain significantly more research funds than Social Sciences and Humanities projects (13).

[1] See Stanford Gendered Innovations and EU Gendered Innovations 2

A European Research Excellence Criterion

The gender dimension in research has become a critical ambition from a European policy perspective, with increased efforts to actively promote gender equality through various initiatives, leading to a more comprehensive and inclusive approach to scientific inquiry.

Since the European Research Area (ERA) Communication 2012 framework, gender equality and gender mainstreaming in research has become a priority area with 3 key objectives, including the integration of the gender dimension into research and innovation content (alongside gender equality in careers at all levels and gender balance in decision-making) (21). Objectives are reaffirmed in the ERA Policy Agenda 2022-2024 as a core value, promoting targeted actions in line with the Ljubljana declaration (2021) to mainstream gender equality and "develop principles for the integration and evaluation of the gender dimension in R&I content in cooperation with national Research Funding Organisations (RFOs) (21).

The previous framework program - **Horizon 2020 [80 billion €] began to move gender into the spotlight** - aiming to remove barriers that generate discrimination in scientific careers and to promote gender-based analysis in research (24)

With the launch of the current framework program - Horizon Europe 2021-2027 [95,5 billion €], priorities are strengthened. "Horizon Europe goes beyond Horizon 2020, advancing an inclusive concept of gender equality and diversity in open and democratic R&I institutions" (21) in order to enlarge the talent pool and innovation potential. **Addressing the gender dimension is now mandatory in research proposals.**

On a **global level, the UN's Agenda 2030** sets 17 Sustainable Development Goals (SDGs) and makes it clear that **development will only be sustainable if it equally benefits all genders**. When women and girls see their rights and opportunities denied, progress will automatically falter, and the agenda as a whole will be compromised. The mainstreaming of a gender perspective into all SDGs is regarded as crucial to ensure success - such as SDG 8 'inclusive economic growth' and SDG 9 'Industry, Innovation and Infrastructure'. R&I that is driving the transformation towards the so-called 'knowledge economy', needs to consider gender as a prerequisite condition to its achievement (25)

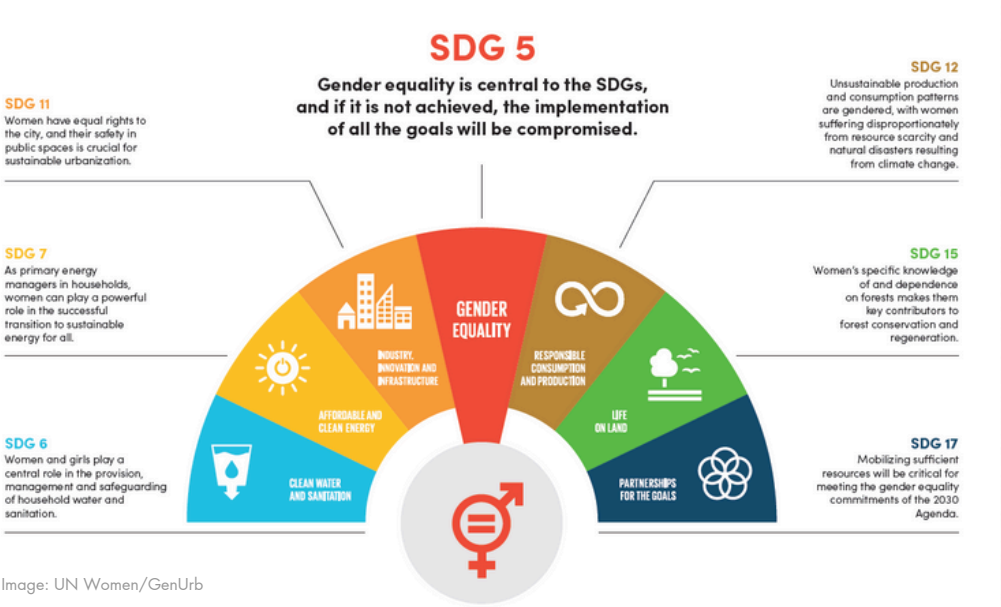


Image: UN Women/GenUrb

How are my research & funding ambitions practically impacted?

New Rules in Horizon Europe

A key structural development, impacting stakeholders in the research community, is that **Horizon Europe marks the need to consider the gender dimension in research proposals as a mandatory 'Excellence Criterion' to attain funding**.

Researchers must show they address a gender dimension in their project:

> *Gender equality, diversity and inclusion should be considered in the **full research cycle**, from the setting of research priorities through defining concepts, research questions, methodologies, gathering and analysing sex/gender disaggregated data, as well as dissemination, exploitation, impact, and transfer to market into products and innovations (3).*

These policy developments that redefine **participation criteria** in Horizon Europe, are set against the backdrop of **3 key levers,** impacting applicants and institutions alike:

1 **ELIGIBILITY CRITERIA** > Gender Equality Plan [Institutional policy level]

Participants who are public bodies, research organisations or higher education must have a Gender Equality Plan (GEP) in place, as a mandatory requirement, to be eligible for funding (26).
[Read up on ULB's GEP and Gender & Diversity policy]

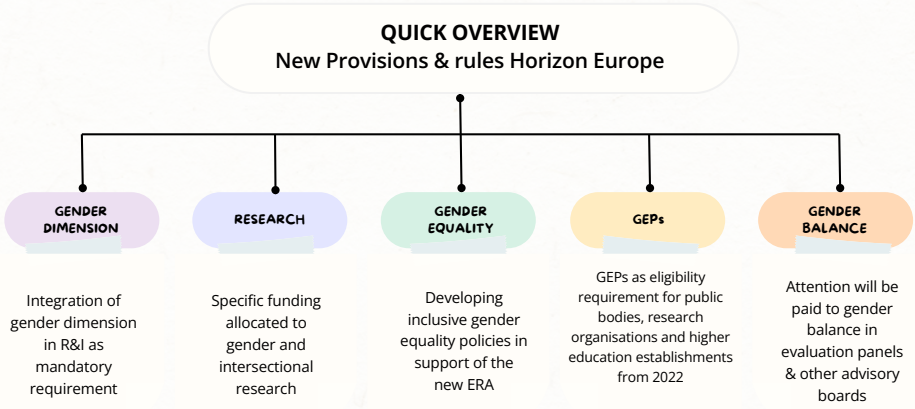
2 **AWARD CRITERIA** > Gender Dimension [Project/Consortium level]

Funding proposals now require addressing the gender dimension as mandatory award criterion, evaluated as an excellence criterion under the methodology section of applications (3).

3 **RANKING CRITERIA** > Gender Balance [Researcher(s)/Consortium level]

Gender balance (the participation rate of men and women) within the applying research team is also considered in the evaluation of proposals and used as a ranking criterion to differentiate between proposals attaining an equal score (3)[1].

The 3 criteria are treated in detail in Chapter 4 – elaborating what participants can expect in the 'application form' for EU funding.



It is important to keep in mind that Horizon Europe also seeks to strengthen an **"intersectional approach"** – part of the EU Gender Equality Strategy [2020-2025]. Consideration is given to interlocking systems of power between gender and other social categories and identities such as **ethnicity** and 'race' (including *migrants/refugees*); **social class** and wealth; **gender identity** and sexual orientation (*LGBTI+ issues*); and **disability** to better address multiple and interacting factors of inequality (24). *Research should consider it whenever possible.*

[1] Representation is also considered beyond a binary definition of gender – see Chapter 4, section 3: Ranking criteria

Mind Map Breaking Down EU Gender Terminology

GENDER EQUALITY

- Refers to equal rights, responsibilities, opportunities for all genders and sexes
- Does not mean women & men will become the same but that people's rights, responsibilities, opportunities will not depend on the sex they are born with.
- Implies interests, needs & priorities of all sexes are taken into consideration, recognising the diversity of different groups
- Is not a women's issue, but should concern & fully engage all individuals
- Is both a human rights issue & a precondition for sustainable people-centred development

GENDER IN R&I

GENDER DIMENSION IN CONTENT

- Umbrella term covering the integration of sex and/or gender analysis in the design and delivery of R&I , to foster excellence
- Ensures R&I outputs benefit everyone in society and are adapted to people's needs and behaviours.
- Integrating the gender dimension in R&I content is mandatory by default in Horizon Europe, evaluated under the 'excellence' award criterion (methodology section).

GENDER DIMENSION VS. GENDER BALANCE?

GENDER BALANCE IN TEAMS

- Horizon Europe projects must aim, to the extent possible, for gender balance at all levels of personnel, including supervisory & managerial level
- Balance between the number of women & men researchers involved in proposals is a ranking criterion for proposals with the same score.
- Particular attention is paid to ensure gender balance in related advisory bodies e.g. boards/expert groups & in evaluation panels, with a target of 50% women.

GENDER IDENTITY

- Researchers participating to Horizon Europe can self declare their gender identity along 3 categories: woman, man, non-binary.
- However, as the "non-binary" category currently represents less than 1% of self-declared identities, it's not taken into account in the calculation of the ranking criterion for ex aequo proposals.

Source: custom adaptation of concepts from 'Gender in EU research and innovation' website (2023)

Tools & Best Practices

Integrating the gender dimension in design & content

This section seeks to help participants practically achieve the gender dimension as an excellence criterion in their work. When crafting research proposals, this section suggests key tools, areas and recommendations to pay attention to when integrating a gender dimension and analysis into research design.

Note: In some project cases – such as '**Fundamental research**', it may be more difficult to establish a direct link to the gender dimension – particularly in terms of results and their direct improvement of life conditions. However, **researchers should keep in mind that at each step of the research cycle they can inspire the future.** Meaning, their research may often be a critical building-block for future research endeavours, where at later stages their results are taken forward by peers into projects that are more 'ready to innovation/application'. Thus, it remains important to avoid 'gender blindness'. Particularly in *dissemination efforts*, researchers can emphasise in a 'forward looking' way, what future impact/application their results could potentially have on people's lives, to inspire new research avenues.

1. Research Approach & Ideation Phase

- Explicit definitions of sex and gender should be included when they connect to aspects of the research study, and these should be clearly outlined in their relevance to a research topic.
- Gender analysis should always be taken into account when the object of the research is humans (directly or indirectly), given the sex and gender differences in their bodies, behaviours, social constraints, etc. Also, in cases where humans are not "directly implicated e.g. in technological research like artificial intelligence, different gender categories (as potential users, customers, citizens, workers, etc.) can also be affected differently by the results of the study" (27).
- Consider if the basic anatomical and physiological differences between female, male and intersex individuals are adequately in focus. For instance, in technological innovation, are there further differences that should be considered (e.g. in vision, hearing, voice pitch, sense of touch, smell and taste, muscular tension, temperature perception, etc.)?
- Sex and gender shape the way bodies function and how people behave and interact with the world, how they relate to a problem or solution (13). Thus, when relevant, it is important to adopt a gender-sensitive approach throughout the whole research cycle, meaning integrating sex and gender in your research question, hypothesis, methodology and result dissemination (3). It is also important at this stage to be mindful not to reproduce gender stereotypes and traditional gender roles attributed to each gender (13).
- Are there other dimensions that can be considered in relation to sex/gender, such as age, ethnicity, educational level, income, occupation, geographical location or technical competence?

We can reflect on how sex and/or gender matters: Think about and present how the gender dimension will provide **added value** in terms of creativity, excellence, and return on investment, both from public and private perspectives (3)

Exceptions to not consider the gender dimension should only be made where the application of results does not affect humans directly or indirectly. Here we may keep in mind that sex-based analysis also remains relevant in biomedical research [cells, tissues, animals]

2. Literature Review

- For the literature review to be gender inclusive, it must be composed of prior studies that highlight similarities and/or differences between the sexes/genders (27).
  Be mindful: the purpose is not to simply apply an approach that actively looks to 'differentiate' between different sexes and genders - seeking out differences – but to also allow for relevant 'convergence' and similarities to emerge. Attention should be paid to *carefully investigate where differences and similarities truly occur and intersect.*
- Make sure **articles you have gathered include a gender dimension** and, if they don't, think about/question what they might be missing (13).
- In this part we can also **consider the production of new knowledge on gender:** mapping out what is already known in the area in terms of the gender dimension (e.g. related scientific literature) and to critically identify what is missing.

In a plethora of fields of study, gender knowledge still is lagging and needs to be generated (20). Here **novel research can give new impulses** and enhance excellence in terms research uniqueness!

3. Research Question & Hypothesis

The way a research problem is formulated will determine which central and intersecting variables are relevant for analysis.

- **Analyse and assess the state of knowledge** about sex/gender and highlight how these findings could be applied to the topic (27).
- Here we can **also consider social categories/factors intersecting** with sex and gender: Intersectional research should be designed to illuminate the multiplicative effects of different, but interdependent, categories and factors (3).

4. Methodology

The methodology is a very important section providing the chance to 'spotlight' gender! It needs to ensure that gender/sex differences will be investigated.

- **When composing the research sample,** pay attention to the gender dimension - if your research involves humans, include proportional representations of all genders and if possible, integrate intersecting factors (like age, ethnicity, religion, sexual orientation, occupation, education, income etc.) (27).
- Demonstrate how **sex/gender differentiated data** will be collected and analysed in the results throughout the research cycle.
- Consider **how questionnaires, surveys, focus groups, etc. are designed** to unravel potentially relevant sex/gender differences in data. Reflect if gender balance and other variables can be assured in the groups involved in the project (samples, testing groups).

Consider how data will be analysed according to the sex/gender variable, and if there are any other potentially relevant variables to be analysed. *In the case where only one gender category is used, justify why, and note the limitations of your research* (3).

5. Results & Knowledge Dissemination

A good research proposal design should ensure a strong dissemination and communication strategy that effectively spotlights and uses sex/gender findings and outcomes.

- Make sure to **feature and describe differences in outcomes based on sex/gender**. If no such relevant data is available – this should also be specified (28). How are the different genders going to make use of your research results? How is your research going to have a direct or indirect positive social impact? (27)
- When communicating about/throughout your research, make sure to **use gender sensitive language** (13). To help you achieve this, check out ULB's guide on inclusive language. You can also consult the EIGE Toolkit on Gender-sensitive Communication for more advice.
- A key role that researchers and research organisations can play is also to **inform, sensitise and raise awareness** in their readership, peers, policy makers, media, and society at large, by effectively communicating on sex/gender progress, stereotypes, and biases in findings.

Your research can provide valuable insights and be a catalyst to evaluate the impact of policies, actions, and initiatives and to "*stimulate the public debate, questioning current norms and values in order to transform society*" (28).

Extra Tips – Giving gender a winning chance

Consider multidisciplinarity in your mission and team

Sex/gender aspects can be considered as part of a 'multidisciplinary approach'. Reflecting on these dimensions in relation to other disciplines e.g. health, transport, energy, security, etc. is a unique chance to **foster cooperation between diverse disciplines, scientists with gender expertise and others**, while also increasing the angles from which a research idea is tackled.

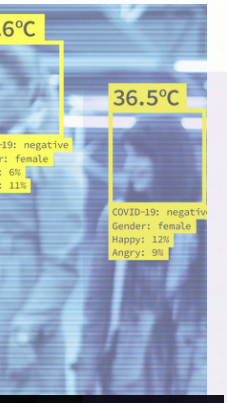
This approach enables concepts and findings to pollinate across the borders of different fields, leading to often new and unexpected findings, while encouraging the evolution of research methods (3).

Gender expertise matters

To effectively implement tools and approaches that promote and integrate the gender dimension, it is very beneficial if the executing researcher/research **team is skilled with a certain degree of prerequisite knowledge and competences on gender issues.** Also gender experts can be a valuable resource, that can be brought into the proposal design and project implementation phase, to provide targeted advice. Organising the possibility for team members to benefit from gender related trainings can equally be an opportunity to up-skill competences and increase the potential for success of projects (27).

Gender competences in people contributing to research are crucial to ensure that gender analysis is not neglected at any stage.

More R&I case examples - impact of the gender dimension



AI: Unveiling Biases in Facial Recognition Tech

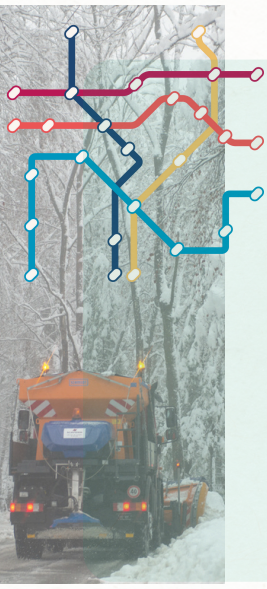
Facial Recognition Systems (FRSs) can perpetuate social injustices by incorporating human biases, as demonstrated by Zhao et al. (2017) and Keyes (2018).

- FRSs revealed gender and racial biases, where systems performed better on men's faces and on individuals with lighter skin.
- This bias was exacerbated by 'training/input data' that predominantly depicted women in certain contexts (like in the kitchen), leading to misidentifications.
- Further there is a clear oversight of transgender individuals in FRS research

There is an urgency for the revision of algorithmic parameters and the use of eye features for more accurate recognition, tackling these biases to develop just and responsible technologies.

Excellent read: "Unmasking AI: My Mission to Protect What is Human in a World of Machines" by Dr. Joy Buolamwini (2023).

Picture source: Poet of Code - Coverpage book "Unmasking AI: My Mission to Protect What is Humain in a World of Machines" (2023)



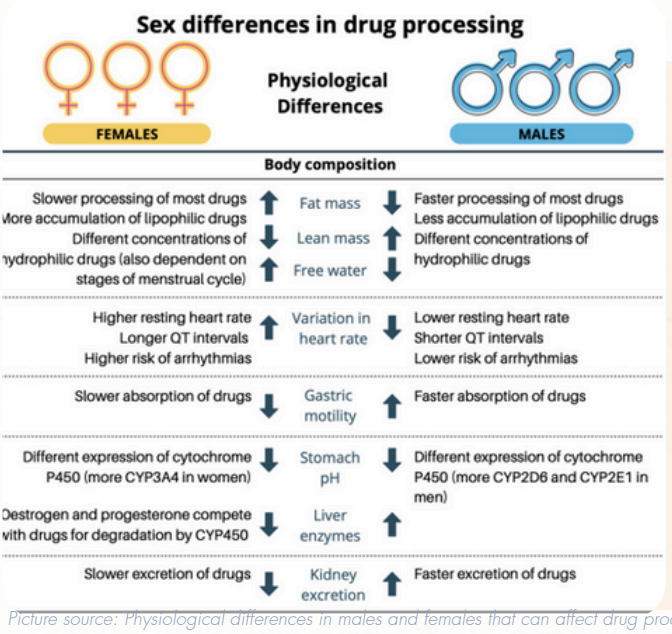
Breaking the Ice: Gender-Equal Snow Clearing in Sweden

When it snows, car roads in Karlskoga (Sweden) are the first to get cleared out.

- However, women are found to use walkways, bike paths and public transportation more often than men.
- Consequently, the snow clearing schedule has different impacts on women and men, which led the city to reconsider its snow clearing approach: priority was given to walkways, bike paths and bus stops before roads, as well as to schools and major employers.

This shift made the city more accessible to everybody and benefited the city economically.

Learn more & watch: MSCA's video – Understanding gender dimension for MSCA projects.



Let's talk about sex: Differences in drug therapy

Women experience adverse drug reactions from approved drug products more often than men

- Distinct differences in pharmaceutical response across drug classes and the lack of understanding of disease pathophysiology also exists between the sexes, often leading to suboptimal drug therapy in women (28).

Learn more: Let's talk about sex: Differences in drug therapy in males and females

Picture source: Physiological differences in males and females that can affect drug processing

The gender dimension in proposal applications

Gender in the proposal template Horizon Europe

When applying for funding, where in the application process do I have to prove the integration of gender in my research? This section seeks to help participants identify where in the application process the gender dimension is required.

Gender is relevant at three levels of the proposal:

Eligibility Criteria | Award Criteria | Ranking Criteria

1 **ELIGIBILITY CRITERIA** > Gender Equality Plan

To be eligible for funding, *public bodies, research organisations or higher education institutions* established in a Member State or Associated Country *must have a Gender Equality Plan (GEP) in place* – i.e. a set of actions promoting gender equality through institutional and cultural change in R&I organisations (26). The 5 recommended GEP content areas include 'the integration of the gender dimension in research and teaching content'.

→ Read up on ULB's GEP and Gender & Diversity policy

Applicants/consortium members will have to prove they possess a GEP: by providing a publicly accessible link to their GEP to be able to sign the grant agreement.

2 **AWARD CRITERIA** > Research Excellence

The gender dimension in R&I content is a mandatory requirement and a formal 'Award Criteria'.
It is a requirement set by default across all work programmes, destinations, and topics.

In the proposal template > Excellence section:

- Applicants are invited to describe how the gender dimension (i.e. sex and/or gender analysis) is considered in the project's R&I content.
  [Unless its non-relevance for a specific topic is specified in the topic description]

What is evaluated in the Excellence Section?

The gender dimension is reflected in the corresponding application forms (proposal template) under the Excellence Evaluation Criterion in two places:

1. Technical Description 2. Methodology Section

TECHNICAL DESCRIPTION

→ **Part B: Technical description – Section 1: Excellence – p. 7**

Excellence – aspects to be taken into account.

- Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious, and goes beyond the state of the art.
- Soundness of the proposed methodology, including the underlying concepts, models, assumptions, interdisciplinary approaches, appropriate consideration of the gender dimension in research and innovation content, and the quality of open science practices, including sharing and management of research outputs and engagement of citizens, civil society and end users where appropriate.

METHODOLOGY

→ **Part B: Technical description – Section 1: Excellence – 1.2. Methodology – p. 8**

- Describe how the gender dimension (i.e. sex and/or gender analysis) is taken into account in the project's research and innovation content *[e.g. 1 page]. If* you do not consider such a gender dimension to be relevant in your project, please provide a justification.

  ⚠ *Note: This section is mandatory except for topics which have been identified in the work programme as not requiring the integration of the gender dimension into R&I content.*

  ⚠ *Remember that this question relates to the content of the planned research and innovation activities, and not to gender balance in the teams in charge of carrying out the project.*

  ⚠ *Sex and gender analysis refers to biological characteristics and social/cultural factors respectively. For guidance on methods of sex / gender analysis and the issues to be taken into account, please refer to* https://ec.europa.eu/info/news/gendered-innovations-2-2020-nov-24_en

If gender/sex are not relevant/considered for a specific field of study, researchers must provide sound justification and evidence (e.g. with appropriate scientific references) proving this, and include a statement such as: « The gender and sex relevance for this study has been evaluated »

- *As the scientific questions (i) do not involve living organisms, and (ii) are related to a future product which is not intended to be used by or with living organisms, including the gender/sex dimension was not pertinent.*
- *Previous literature [cite] shows that the sex/gender parameter has no impact on the outcomes of similar studies, etc.*

3 RANKING CRITERIA > Gender Balance as a tie breaker

Horizon Europe projects should aim for a 50/50 participation rate of both men and women (1). Achieving gender parity amongst teams and in leading roles is now a 'ranking criterion' taking effect for proposals which have attained an equal evaluation score (1). *Gender representation and diversity of teams can thus help applicants boost the competitiveness of a proposal and increase its ranking.*

▷▷▷ Researchers in the project have the possibility to *self-identify* in proposals and project reporting according to three categories: woman, man, or non-binary.

For Marie Skłodowska-Curie Actions (MSCA), once gender balance has been considered in the 'ranking' and, yet, "a distinction between equally ranked proposals still cannot be made, there will be a *further prioritisation based on the gender dimension and other diversity aspects of the research activities*" (29).

→ Part A _ Standard Application Form

Title	First Name	Last Name	Gender	Nationality	E-mail	Career stage[1]	Role of researcher (in the project)
			[Woman] [Man] [Non-binary]			[Category A – Top grade researcher] [Category B – Senior researcher] [Category C – Recognised researcher] [Category D – First stage researcher]	[Leading] [Team member]

As the "non-binary" category currently represents less than 1% of self-declared identities, it's not taken into account in ranking calculations for ex aequo proposals (21). This can change with time though, as representation of this category increases.

Belgian National Funding Bodies

Gender related requirements

National research funding mechanisms are making strides to strengthen the gender dimension in alignment with European priorities. Funding agencies are increasingly including the gender dimension into their missions and application processes. For example, the SAGER guidelines 'describe the rationale for an international set of guidelines to encourage a more systematic approach to the reporting of sex/gender in research across disciplines'.

Belspo, the federal science policy department, works closely with the ESFRI (European Strategy Forum on Research Infrastructures (30). Since 2016, the General Gender Mainstreaming Coordinator is charged with equal opportunities, diversity and disability issues (31).

- Belspo's Gender Equality Plan includes the integration of the gender dimension in R&I, gender equality in recruitment and careers as well as gender balance in research teams and evaluation panels.
- Proposals for the ESFRI-FED Programme 2023-2024 require that the gender dimension in content of R&D projects needs to be addressed as part of the methodology section.
- The application also includes a dedicated section on gender balance, which needs to be elaborated according to several variables.
- A Gender Equality checklist is to be consulted by evaluators and applicants before filling in the form.

Innoviris, responsible for financing and fostering R&I within the Brussels-Capital Region, in its Gender Equality Plan (2022-2027), contains measures on the integration of the gender into research (32).

- R&D Project Call 2024: researchers must fill in an "Equal Opportunities" test, a new tool implemented by the Region (mandatory since 2019) in order to verify the impact of policy measures on different population groups whose situation and specific needs are often not taken into account.
- In this test, researchers must explain how they have taken criteria, such as sexual orientation, gender identity and expression into account and elaborate how they are treated in the research cycle.

FNRS develops and funds research and is a strong provider of specialised support for researchers, addressing questions about funding eligibility, the evaluation process and steps that must be taken with respect to ethics, data management or the preparation of contract with the European Commission.

- In its Gender Equality Plan 2022-2025, FNRS actively commits to closing the gender gap on several fronts e.g. via **an inclusive evaluation panel charter**, by training evaluators on unconscious biases (33).
- FNRS with partners organises regular *info and training sessions also targeting the topic of gender*, helping to ensure expectations of the European Commission and evaluators are met and help researchers improve their successful project submission (34).

Gender dimension checklist

Check your research proposals for the gender dimension: did you hit the mark? The checklist below helps researchers and grant applicants verify the level of gender-sensitivity in their project and research design.

Research Approach

- [ ] In your approach, have you checked and analysed the sex/gender relevance in relation to your research topic?
- [ ] Do different gender categories relate differently to the research problem you are elaborating? (13,27)
  e.g. Are there possibly differentiated relations of potential users to the research subject sufficiently clear (with their gender identities, sex, age, ethnicity, profession, occupation, education, income, familiarity, attitudes etc.)?
  What role do these factors play regarding the research topic?
- [ ] Are there basic anatomical and/or physiological differences between male, female, and non-binary individuals that should be considered?
- [ ] Have you considered how your research findings will concern and impact the unique needs of different gender categories?
- [ ] Does your research link to potential gender inequalities in society? (13)
- [ ] Did you make sure to avoid projecting stereotypical gender roles? (13)
- [ ] Are you mindful of any ethical implications related to sex/gender which may need to be addressed?

Literature Review

- [ ] Does the literature you mobilise include gender-sensitive studies? (13)
- [ ] Have you reviewed targeted literature in your research field exploring gender/sex differences?
- [ ] Have you diligently applied insights from your literature review to your research design – relating to differences and similarities between genders/sexes [e.g. man/woman; female/male; cells, tissues, animals] (27)

Research Question/hypothesis

- [ ] Did you have all gender categories in mind in the design and formulation of your research question? (13,27)
- [ ] Have you conducted a systematic analysis of sex/gender in your question?

Methodology

- [ ] Does your methodology ensure gender/sex differences will be investigated? Will data be analysed according to sex/gender variables?
- [ ] Will sex/gender differentiated data be collected and analysed throughout the research cycle?
  Do you disaggregate data by sex and/or other gender relevant variables [e.g. marital status etc.] – at collection and analysis phase? (4,13,27)
- [ ] Is the design of e.g. questionnaires and focus groups fit to unravel potential sex/gender relevant differences in data?

- [ ] Does your research sample include an appropriate representation/balance of all genders? (13,27)
- [ ] Does your methodology include intersecting factors with sex and gender (e.g. age, ethnicity, disability, religion, sexual orientation, etc.)?(27)
- [ ] Have you made sure to explicitly explain in your proposal how gender/sex will be handled [e.g. in a specific work package]?
- [ ] Are you considering the 'gender spectrum'?
  - ✓ Use and report, non-binary gender measures.
  - ✓ Report the prevalence of non-binary participants.
  - ✓ Clarify their inclusion and treatment in analysis.
  - ✓ Use gender inclusive language (beyond the binary).

Results & Knowledge dissemination

- [ ] Do you have a dissemination strategy to facilitate the use of sex and/or gender outcomes from your research? (27) Will research results benefit and consider the lives of all genders? (13)
- [ ] Will your analyses highlight results that focus on sex/gender differences that evolved in the course of the project? (13)
- [ ] Are you mindful of how different genders will use the results in different ways?
- [ ] Are institutions, departments and journals that focus on gender/sex included among the target groups for dissemination, alongside mainstream research outlets?
- [ ] Have you considered disseminating in the frame of a specific publication or event on gender-related findings?
- [ ] Is gender-sensitive language being applied?

Research Team

- [ ] Have you considered increasing the diversity in your research team?
- [ ] Are you dissuading hierarchical gendered relations and gender segregation in your team?
- [ ] Are the working conditions favourable to all gender categories?

Useful Resources

Contacts

- Support around EU/International projects: ulb-europe@ulb.be
- National projects: ulbkto@ulb.be
- More info around gender and diversity at ULB: genreetdiversite@ulb.be
- National Contact Points (NCP) : ncp@frs-fnrs.be
- EU projects (European Commission DG R&I) : rtd-genderinresearch@ec.europa.eu

Learning from R&I case examples across disciplinary areas

Gendered Innovations 2
Gendered Innovations Fact sheet
Gendered Innovations website
European Research Council – Seminar on Sex and Gender dimension in frontier research – examples collection
IGAR Tool – Gender Analysis into research – collection of examples
GEECCO – Integrating the gender dimension in the content of R&I - collection of examples
What is the gender dimension in research? Case studies in interdisciplinary research (2018) Kilden
Uppsala Universitet (Sweden) – Center for Gender Research – collection of examples
Clayman Institute for Gender Research

- "Harnessing the power of gender analysis in science and research" – A. Ferrara
- "Fix the knowledge" – L. Schiebinger Gendered Innovations framework at Stanford
- Gender and fairness in machine learning and robotics
- More Inclusive Gender Questions Added to the General Social Survey

Videos – Examples of integrating the gender dimension in research

MSCA video
Sex and gender dimension in research: Mobility
Sex and gender dimension in research: Health & Medicine
Humans and computers: What should the interface between humans and computers be like so the highest possible number of people can use the product?
Robots in our society: What does robotics have to do with gender?
Assessing Sex and Gender Integration in Peer Review - Canadian Institute of Health Research

Bodies supporting the gender dimension R&I

European Institute for Gender Equality – Gender Equality in Research and Academia – GEAR Tool -GenderInSITE -
GenderNet – Network of European funding agencies committed to promoting gender equality R&I

Tools

IGAR Tool for Integrating Gender Analysis into Research
Yellow Window - Gender in EU-funded research: Checklist and Toolkit
GEECCO TOOL – Center of Excellence Women and Science: Gender Monitoring
Canadian Institute of Health Research – How to integrate sex and gender into research

Horizon Europe Programme

Horizon Europe Programme Guide
Horizon Europe Fact Sheet

Publications _ gender and sex analysis in research

Leru (2012), Women, research and universities: excellence without gender bias.
Leru (2015), Gender and sex matter in research: Twenty recommendations from Europe's research universities.
Gendered Innovations in Science, Health & Medicine, Engineering, and Environment,
Sex and gender analysis improves science and engineering.
Sex/gender reporting and analysis in Campbell and Cochrane systematic reviews: a cross-sectional methods study.

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