

Improving excellence by integrating inclusive sex and gender analysis in research and innovation

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Main novelties include the following:

- The integration of the gender dimension into research and innovation content (i.e. sex and gender analysis) becomes a requirement by default across the whole programme (for more information see the ‘Gendered Innovations’ policy report).
- A new eligibility criterion to get access to Horizon Europe funding: public bodies, research organisations and higher education establishments will be required, starting in 2022, to have a gender equality plan (GEP) in place. This will ensure sustainable institutional change”.



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I am determined to step up our efforts on gender equality and support more talented women in research and innovation. I am committed to ensuring that the gender dimension is fully integrated into research and innovation supported by Horizon Europe, and that it is fully acknowledged in the European Research Area.

Mariya Gabriel *Commissioner for Innovation, Research, Culture, Education and Youth*

GENDER EQUALITY

**A STRENGTHENED COMMITMENT
IN HORIZON EUROPE**

What is the challenge?

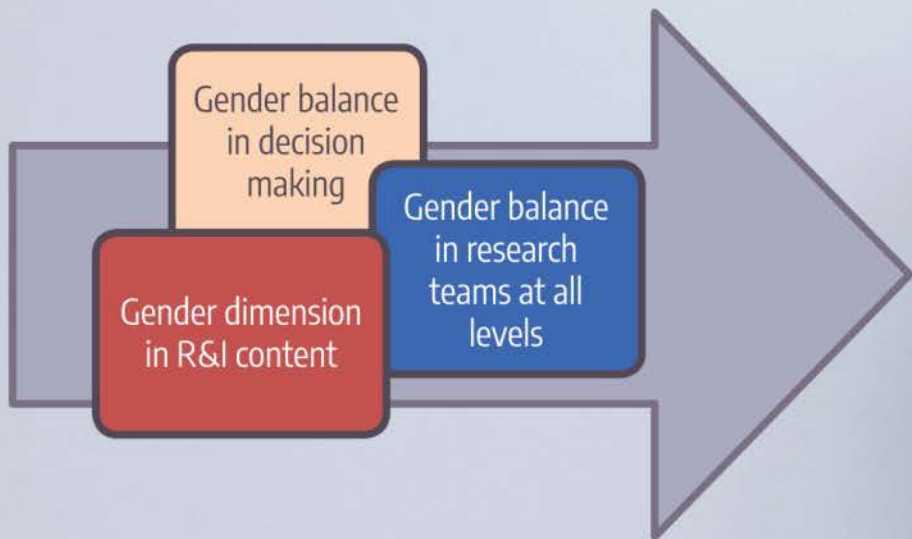


Rationales of science funding bodies (the Why)

- EU H2020: Integrating gender/sex analysis in research and innovation (R&I) content helps **improve the scientific quality and societal relevance** of the produced knowledge, technology and/or innovation
- CIHR (IGH) : Integration SGBA+ is about **improving the rigor, reproducibility and generalizability** of science. It's about excellence.
- NIH OWHR: The SABV policy is meant to be a new standard to **enhance reproducibility through rigor and transparency** and increase the knowledge base.
- NL G&H: to **reduce differences in health** between women and men by addressing gaps in knowledge.

Intriguing questions

- Why do we observe differences between women and men in infection levels and mortality rates in the COVID-19 pandemic?
- Does it make sense to study cardiovascular diseases only on male animals and on men, or osteoporosis only on women?
- Does it make sense to design car safety equipment only on the basis of male body standards?
- Is it ethical to develop AI products that spread gender and racial biases due to a lack of diversity in the data used in training AI applications?
- Is it normal that household travel surveys, and thus mobility analysis and transport planning, underrate trips performed as part of caring work, which are predominantly undertaken by women?
- Did you know that pheromones given off by men experimenters, but not women, induce a stress response in laboratory mice sufficient to trigger pain relief?
- And did you know that climate change is affecting sex determination in a number of marine species and that certain populations are now at risk of extinction?



EU Gender Equality Policy

Ineke Klinge • The passion of a pioneer


Gendered innovations



Brief history of policy development on the gender dimension in R&I content

- Gender Impact Assessment studies 2000-2001
- FP6 (2002-2006)
- FP7 (2008-2014)
 - Gendered Innovations 1(2011-2013)
- Horizon 2020
 - Advisory group on Gender (2014-2018)
 - Gendered Innovations 2 (2018-2020)
- Horizon Europe
 - Addressing sex and gender analysis as a default condition

Tackling the challenges

- Understanding the gender dimension (EU-speak): taking into account sex related factors and gender related factors into the content of research. New concept so:
 - not to be confused with gender balance
 - not to be confused with women's issues
- Resistance, ridiculising, ignorance,
- Support for researchers needed 
 - Expert Group “Innovation through Gender”
 - Gendered Innovations 1 & 2

What do researchers need?



Innovative methods of analysis (usually not part of their training)



Examples of how by employing methods of sex and gender analysis **new knowledge** can be created



Methodological, practical, ethical and financial issues at stake



Clarification of concepts and terminology

EC Expert group: Innovation through Gender

- Directed by Londa Schiebinger (Chair) and me (Rapporteur) Gendered Innovations 1 en 2 : 2011-2013 & 2019-2020
- Started at Stanford University (2009); funded by EC 2011 - 2020; NSF contribution
- International collaboration of more than 220 experts from Europe, US, Canada and Asia
- Series of interdisciplinary workshops resulting in peer-reviewed methods en case studies

[What is Gendered Innovations? | Gendered Innovations \(stanford.edu\)](#)

The rationale for incorporating the gender dimension

- Every cell is sexed and every person is gendered
- Brings added value of research in terms of excellence, rigor, reproducibility, creativity and business opportunities
- Brings an in-depth understanding of all people's needs, behaviours and attitudes
- Goods and services better suited to the needs of all citizens
- Enhanced societal relevance of research and innovation

Therefore, addressing the gender dimension in R&I is contributing to:

- Improving the scientific quality and societal relevance of the produced knowledge, technology, and innovation;
- Upgrading the rigor, reproducibility, and generalizability of science;
- Increasing the knowledge base that will have a societal value.

When relevant ?

On sexed bodies and gendered persons

- **Consider the following points on integrating a sex/gender dimension into research and teaching.**
- **A subject is considered sex- / gender-relevant when it can be expected that its findings affect (groups of) women and men, or girls and boys, differently.**
- **Integrating the gender dimension in the research content requires the consideration of sex and gender aspects throughout all stages of the research cycle: in the definition of research questions and hypotheses, in the selection of research methods, during the running of research activities, and in the analysis and reporting of results.**
- **Science, technology, engineering and mathematics (STEM) research topics often appear to be gender-neutral. In such cases, the following questions can be asked about aspects that are not gender-neutral: Who decides on the research agenda? Whose interests and needs are served with the research? Who will be the users of the knowledge that is to be produced? Who can benefit and in what way from the research? It is always relevant to produce research that has a high societal value and can provide answers to societal needs.**
- **When including the gender dimension in research projects, it is often necessary to broaden the perspective and also consider other dimensions of diversity. To that end, an intersectional approach can be helpful. Read more about intersectionality [here](#).**
- **Teachers' and lecturers' interactions with students are unconsciously influenced by gender stereotypes. Young people also hold stereotypical beliefs about women's and men's 'natural' abilities. Countering such stereotypes allows everyone to engage with science in all its aspects without constraints set by ungrounded preconceptions.**

Gendered Innovations 1 (2011-2013); tackling the needs of researchers

Developed state of the art **Methods** for sex and gender analysis

Provided **Case Studies** to illustrate how sex and gender analysis leads to discovery

Report: How gender analysis contributes to research and Innovation, 2013

Website <https://genderedinnovations.stanford.edu/>

What is **Gendered Innovations**?

SEX & GENDER ANALYSIS

[General Methods](#)

[Specific Methods](#)

[Terms](#)

[Checklists](#)

CASE STUDIES

[Science](#)

[Health & Medicine](#)

[Engineering](#)

[Environment](#)

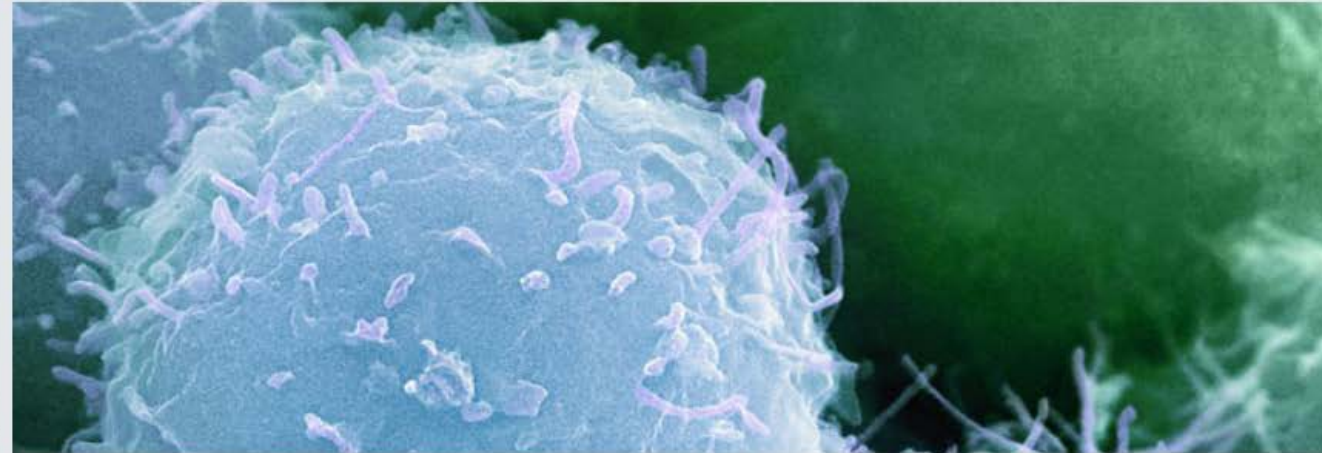
INTERSECTIONAL DESIGN

[POLICY RECOMMENDATIONS](#)

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SCIENCE

Sex and Gender Methods for Research

[Gendered Innovations](#)

SCIENCE

HEALTH & MEDICINE

ENGINEERING

ENVIRONMENT

FEATURED CASE STUDIES



**Marine Science:
Analyzing Sex**



**Chronic Pain:
Analyzing How Sex
and Gender Interact**



**Facial Recognition:
Analyzing Gender and
Intersectionality in
Machine Learning**

Why Gendered Innovations?

Gendered Innovations employs methods of sex, gender, and intersectional analysis to create new knowledge.



GENDERED INNOVATIONS 2: How Inclusive Analysis Contributes to Research and Innovation

Policy Review

1. LIST OF CASE STUDIES

Health

- ▶ Prescription drugs: analysing sex and gender
- ▶ Systems biology: collecting sex- and gender-specific data
- ▶ Chronic pain: analysing how sex and gender interact

Climate change, energy and agriculture

- ▶ Marine science: analysing sex
- ▶ Smart energy solutions: analysing intersectionality
- ▶ Agriculture: embedding gender norms in innovation processes

Urban planning, transport

- ▶ Smart mobility: co-creation and participatory research
- ▶ Waste management: co-creation and participatory design
- ▶ High-quality urban spaces: gender impact assessment

Information and communication technology (artificial intelligence, machine learning, robotics)

- ▶ Extended virtual reality: analysing gender
- ▶ Facial recognition: analysing gender and intersectionality in machine learning
- ▶ Virtual assistants and chatbots: analysing gender and intersectionality in social robots

Finance, taxation and economics

- ▶ Fair tax: gender equality and taxation in the European Union
- ▶ Venture funding: analysing gender

Ad hoc case study: coronavirus

- ▶ The impact of sex and gender in the COVID-19 pandemic

Science Case studies

This page provides practical examples of how sex and gender analysis leads to gendered innovations.



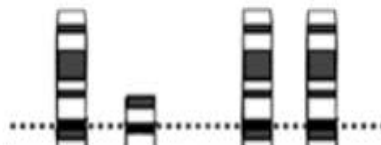
**Animal Research:
Designing Health &
Biomedical Research**



**Animal Research 2:
Analyzing how Sex and
Gender Interact**



**Computer Science Curriculum:
Intersectional Approaches**



**The Genetics of Sex
Determination:
Rethinking Concepts
and Theories**



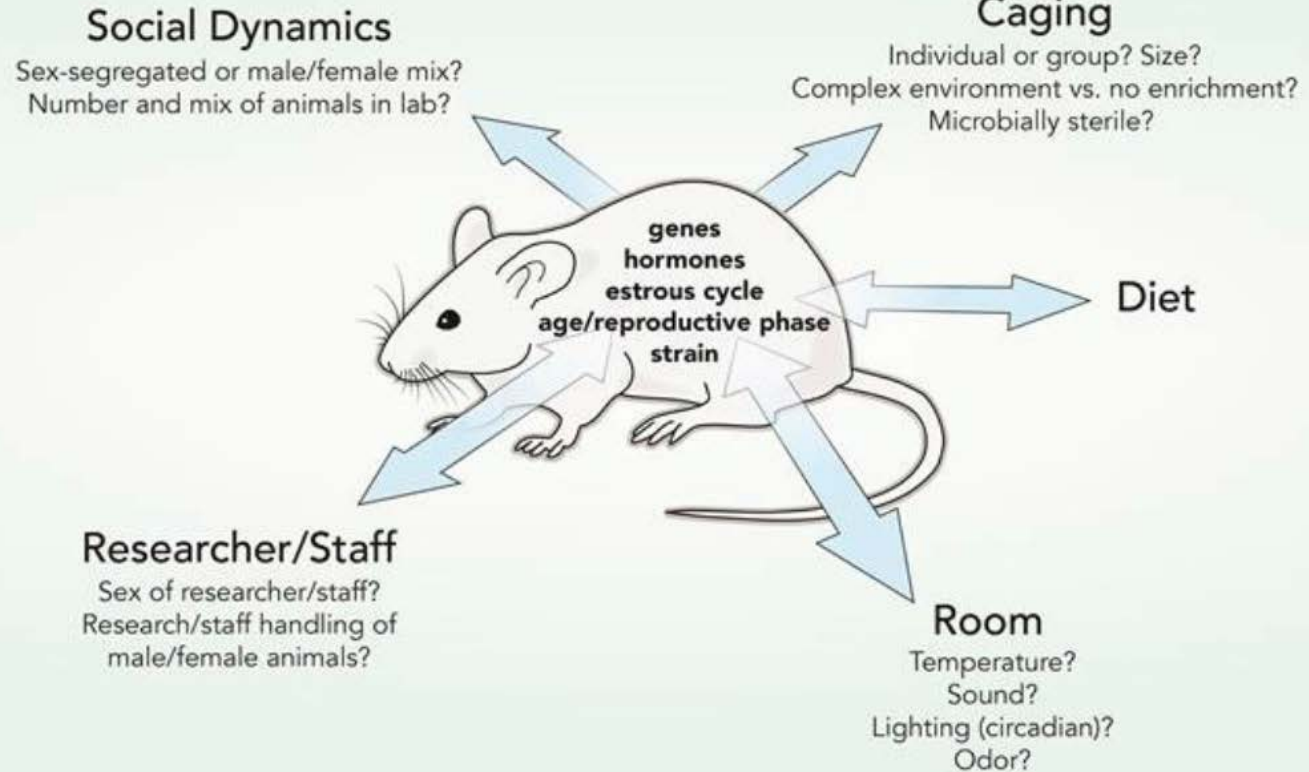
**Stem Cells:
Analyzing Sex**



**Textbooks: Rethinking
Language and Visual
Representations**

Animal research

Sex and Lab Environment Interact



Animal research includes the interaction between sex (biological characteristics, such as genes, hormones, age, reproductive phase, strain, etc.) and gender (socio-cultural or environmental process, such as caging practices, attitudes and behaviors of researchers, room temperature, diet, etc.). The double-ended arrows represent interactions between sex and gender

Health and Medicine Case Studies



Chronic Pain: Analyzing How Sex and Gender Interact



Colorectal Cancer: Analyzing How Sex and Gender Interact



Covid-19: Analyzing Sex and Analyzing Gender



De-Gendering the Knee: Overemphasizing Sex Differences as a Problem



Dietary Assessment Method: Analyzing How Sex and Gender Interact



Gender-Related Variables for Health Research



Heart Disease in Diverse Populations



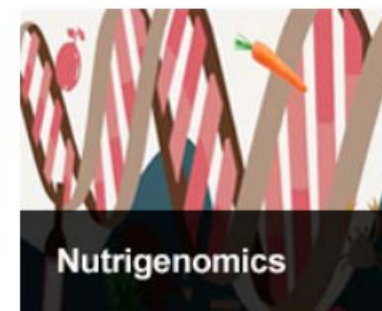
Medical Technology: Intersectional Approaches



Nanomedicine: Analyzing Sex



Nanotechnology-Based Screening for HPV: Rethinking Research Priorities

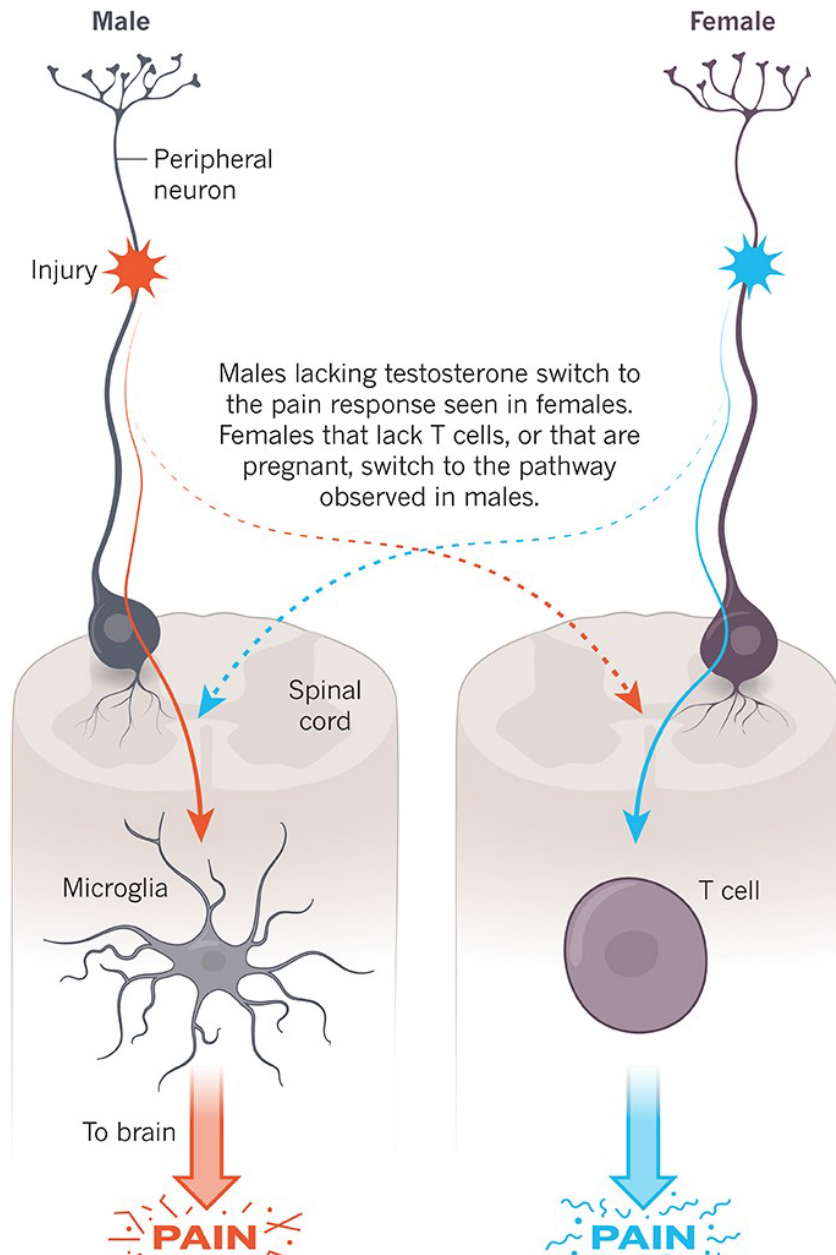


Nutrigenomics



Osteoporosis Research: in Men: Rethinking Standards and Reference Models

Injuries to peripheral nerves — those connecting the brain and spinal cord to the rest of the body — can cause increased sensitivity. In male mice, this response depends on immune cells in the spinal cord called microglia. In females, it is T cells that seem to control the response.



Chronic pain: how sex and gender interact

- **NEWS FEATURE** 27 MARCH 2019
- [Why the sexes don't feel pain the same way \(nature.com\)](https://www.nature.com/news/why-the-sexes-dont-feel-pain-the-same-way-1.14544)
- Sorge, R. E. *et al. Nature Neurosci.* **18**, 1081–1083 (2015).

SEX-RELATED FACTORS

Viral receptor

Distribution of receptor

Virus reproduction

Antibody production

Hormonal effects

Efficacy and side effects of therapy

SARS-CoV2
Infection
-
COVID-19
Disease



GENDER-RELATED FACTORS

Exposure to virus

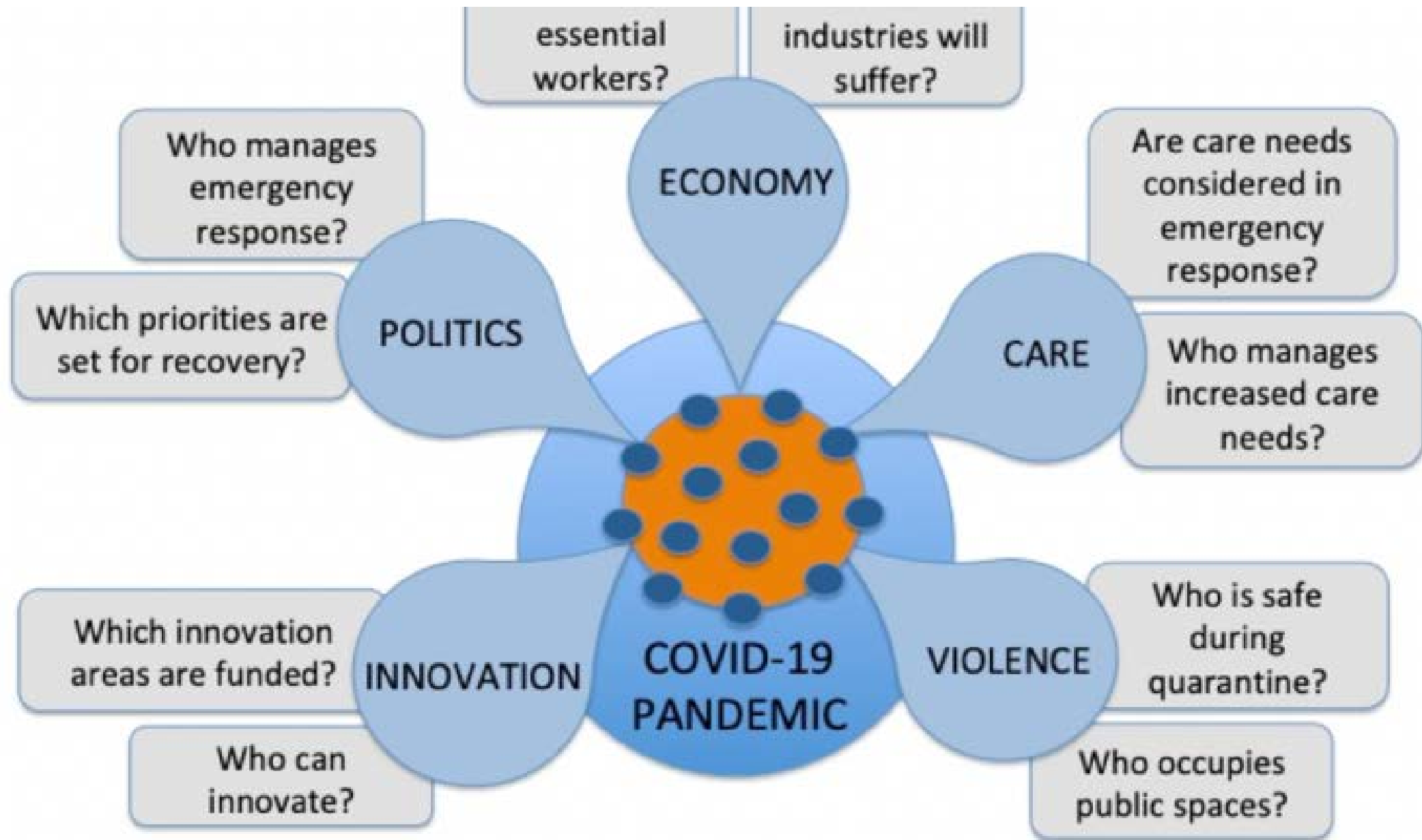
Symptom reporting

Access to testing

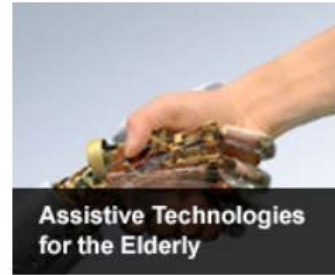
Access to protective equipment

Compliance with prevention measures

Recruitment for clinical trials



Engineering Case studies



Environment Case Studies



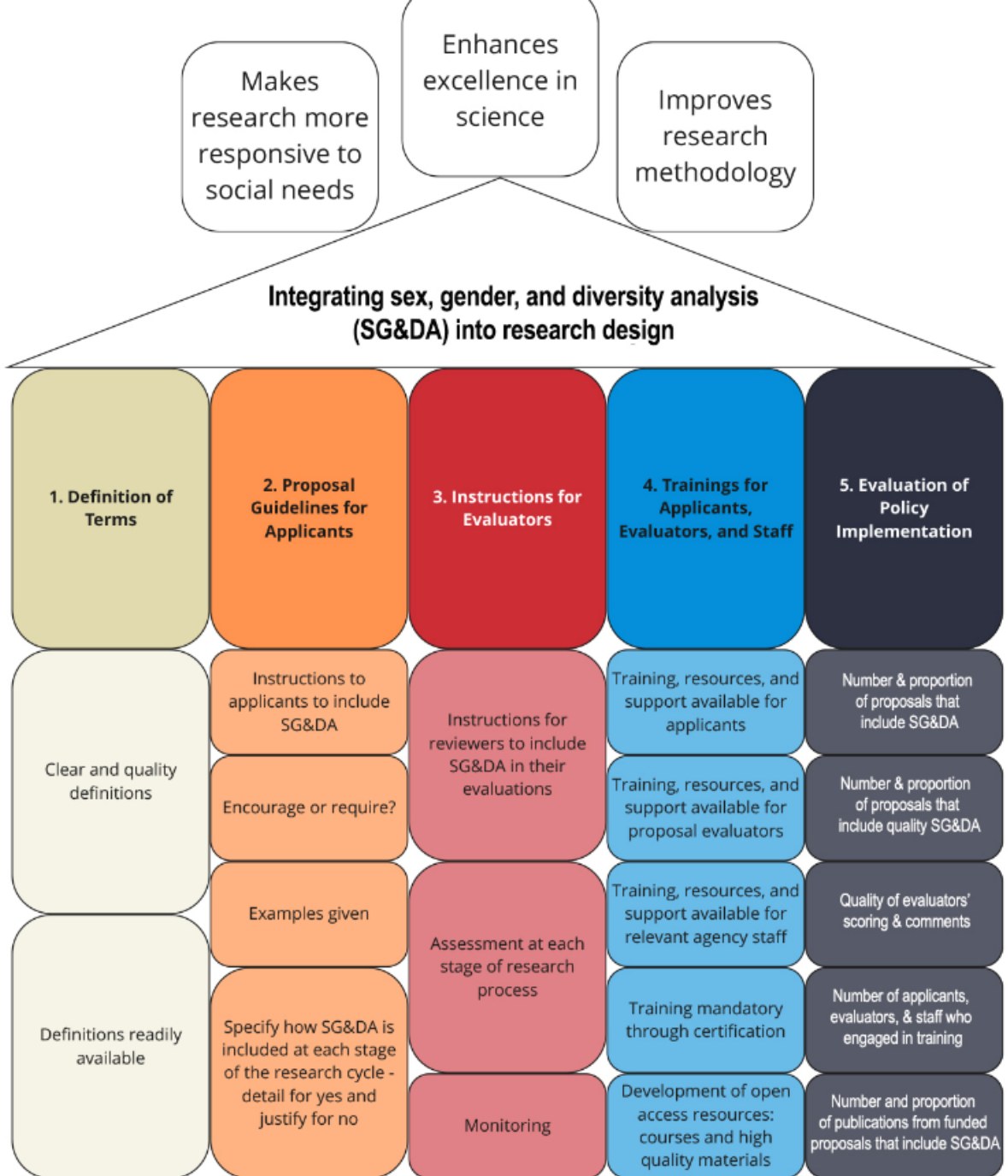
Integrating the gender dimension into Horizon Europe work programmes as the norm/ default

Integrating sex and/or gender analysis into the contents of R & I adds value to research in terms of excellence, creativity and business opportunities. Considering sex and/or gender analysis along with **intersecting categories**, such as ethnicity and socioeconomic status, also fosters innovation and enhances equality by ensuring that findings, products and programmes apply to all citizens and society as a whole. In short: an **inclusive** sex and gender analysis is required under Horizon Europe.

From a comparative perspective see: White J, Tannenbaum C, Klinge I, Schiebinger L, Clayton J (2021) The integration of sex and gender analysis into biomedical research: lessons from international funding agencies. J Clin Endocrinol Metab:dgab434. <https://doi.org/10.1210/clinem/dgab434>

Good practices of funding organisations; Sex, gender and diversity analysis policy roadmap

(Hunt, Nielsen and Schiebinger, Science sept 2022)

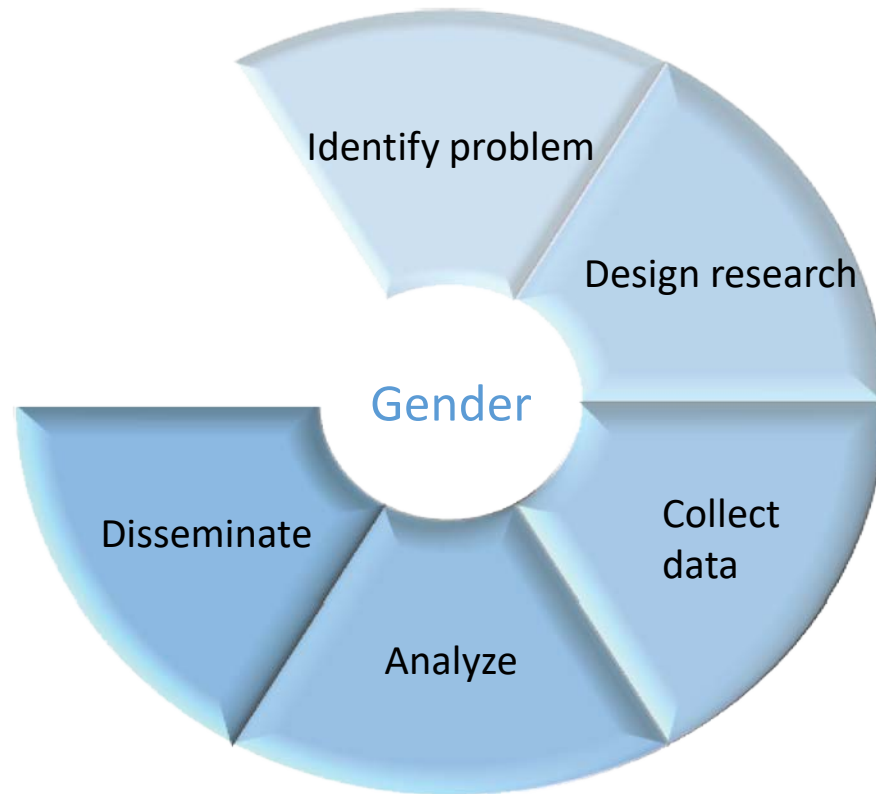
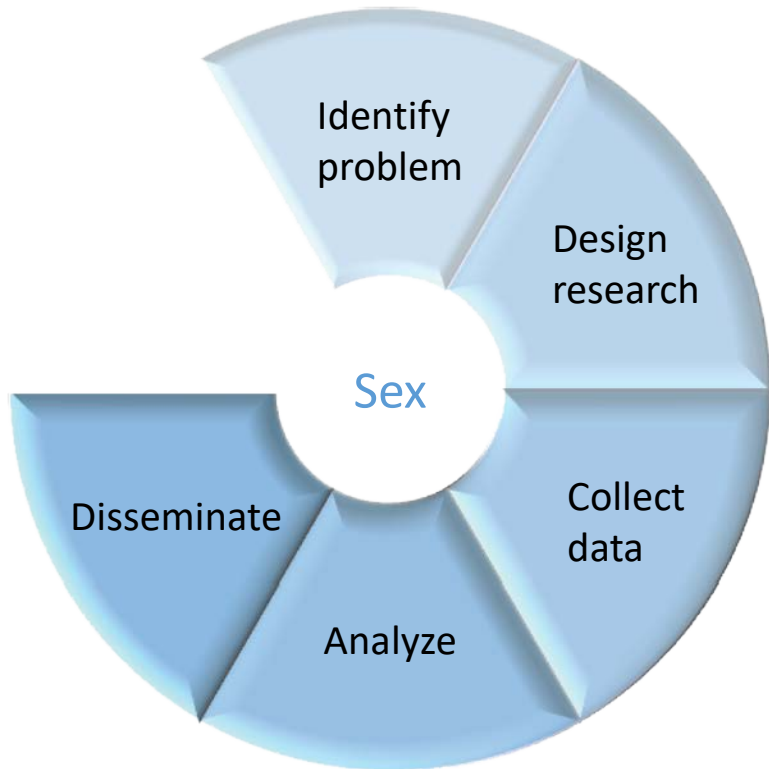


Criteria integration of the gender dimension under HEurope

The integration is evaluated under the excellence criterion

- Clarity of objectives
- Soundness of methodology

The latter refers to the choice of concepts, models, assumptions, interdisciplinary approach, *appropriate consideration of the gender dimension* throughout the whole research process from formulating research questions to analysis and dissemination of results.



The science ecosystem

Researchers: tools and specific trainings available

Funding organisations: the new condition of having a GEP in place

Journals

Evaluators

University curricula

What is a Gender Equality Plan (GEP)

Four process related requirements (...)

Five thematic areas, using concrete measures and targets:

1. Work-life balance and organisational culture.

2. Gender balance in leadership and decision-making.

3. Gender equality in recruitment and career progression.

4. Integration of the gender dimension into research and teaching content.

5. Measures against gender-based violence, including sexual harassment

References

GI 1 How gender analysis contributes to research and innovation: [Gendered innovations - Publications Office of the EU \(europa.eu\)](#)

GI 2 [Gendered Innovations 2: How Inclusive Analysis Contributes to Research and Innovation \(europa.eu\)](#) methods, case studies, policy recommendations

Jamie White; Cara Tannenbaum; Ineke Klinge; Londa Schiebinger; Janine Clayton
[The Integration of Sex and Gender Considerations Into Biomedical Research Lessons from International Funding Agencies.pdf](#) The Journal of Clinical Endocrinology & Metabolism 2021-09-27 DOI: 10.1210/clinem/dgab434

Lilian Hunt, Mathias Wullum Nielsen, Londa Schiebinger A framework for sex, gender, and diversity analysis in research. Funding agencies have ample room to improve their policies
SCIENCE, 29 Sep 2022, Vol 377, Issue 6614 pp. 1492-1495 [DOI: 10.1126/science.abp9775](#)