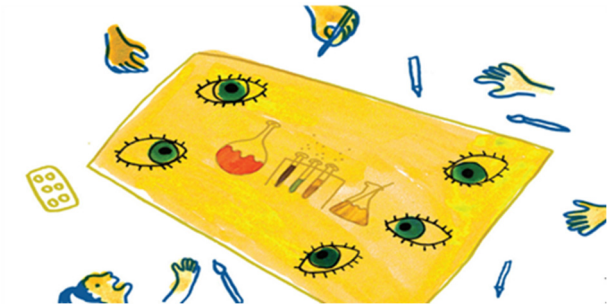
# GENDER AND DIVERSITY IN (NANO) TECH DEVELOPMENT

## IN BRIEF

- How can issues around gender and diversity be integrated into the discussion, development, and policy of nanotechnologies?
- What do "gender equality", implicit discrimination, and inclusion mean in STEM and nano fields?
- Why does the framework "women in science" represent implicit discrimination at gender level?
- GoNano explores how co-creation can bring as many perspectives as possible into technology development.

## WHAT IS IT ABOUT?

Gender roles and identities are amongst the fundamental social factors for our social behaviour: they influence our risk-taking, decision-making or communication behaviour. Compared with biological gender (sex), taking social gender (gender) into account in participatory processes around technology development is a complex matter as it is easier to establish a balanced biological sex ratio than a ratio that makes allowances for bias and diversity. However, large parts of society are potentially discriminated against because of a limited understanding of equality. This is especially true in the STEM field of research where core values and predispositions are formulated in a gender-normative masculin way. Responsible Research and Innovation (RRI) as a concept embraces a holistic-integrated approach in which the dimensions of gender and equality play a significant role. The EU project GoNano aimed at developing visions on nanotechnologies with different social actors (civil society, research, industry). Actively integrating these visions into existing innovation and governance processes had a broad impact. GoNano paid particular attention to aspects of gender and diversity.
Gender, diversity, and intersectionality address different, partly intertwined levels that are particularly important in inclusive and participatory innovation processes.



Credits: Go-Nano / Tonke Koppelaar

Who creates technology for whom?

**Gender** is a fundamental element of social relations based on perceived differences between the sexes. As such, it is also significant when it comes to analysing power relations.

**Diversity** serves to distinguish and recognise characteristics such as culture, gender, age, religion, etc.

**Intersectionality** is the intertwining of different diversity dimensions that can lead to implicit or explicit discrimination (e.g. racism and gender, or gender and sex).

Responsible research acknowledges that gender issues impact on research fields such as STEM and nanotechnologies. Balancing power and representation in democratisation and innovation processes is essential. Implicit discrimination not only affects people who consider themselves non-binary ("Women in Science"), but it also affects people who, because of their education or social background, are less able to participate in deliberative democratisation processes.

## BASIC DATA

| | |
|---|---|
| **Project title:** | GoNano – Governing nanotechnologies through societal engagement |
| **Project team:** | U. Bechtold, D. Fuchs, V. Borrmann (in an international consortium) |
| **Duration:** | 09/2017 – 12/2020 |
| **Funded by:** | EU-Horizon 2020 |
| **Website:** | gonano-project.eu |

# KEY RESULTS

Gender and inclusion were central aspects throughout the implementation of the co-creation events – from recruitment to communication and follow-up.
GoNano actively integrated views that deviated from normative mainstream ideas into the process.
The information provided was written in a clear and understandable communication style, deliberately avoiding simplistic role attributions. These are the most important findings from this approach:

Contexts and intersectionality influence how people form opinions and make decisions. Taking this into account from the beginning enables an inclusive outcome of the overall process.


Credit: gender-gap-in-science.org

Measuring and reducing gender imbalances in STEM subjects on a global level.

**Multidirectional communication** can only develop if contributions from different cultural, demographic, and social identities are included in the process and discussed on equal terms.

**Gender mainstreaming (GM):** In order to integrate different societal visions into existing innovation and governance processes, active awareness of taking gender and inclusion into consideration at applied and content-related strategic level is needed.

**Diversity of all actors:** GoNano clearly showed that it is not enough to pay attention to diversity only when selecting participating citizens. It is equally important that organisers, stakeholders, hosts, and facilitators are intersectional and diverse. Furthermore, the participating actors must be aware of the value of cooperation and be familiar with the importance of the topic of diversity.

# WHAT TO DO?

**The advantages of carefully looking at gender, diversity, and intersectionality require greater emphasis in politics, research, and participatory processes. Their importance should therefore be "spelt out" in calls for projects. The added value of this rethinking should also be reflected in the allocation of resources.**

- Explicit implementation of comprehensive inclusion should be a desirable social and scientific norm in practice and communication. This approach would not only allow for better recognition of implicit discrimination that currently exists in participatory processes and research, but also challenge it.
- The activity should transcend the call of "women into science" as this represents implicit discrimination at gender level. Expanding the spectrum of inclusion and embedding it into language is required.
- Promoting and supporting the extra work resulting from organising and implmenting projects in a gender-sensitive manner is essential. Working on and researching gender issues in research and process work in mathematics, computer science, natural sciences, and technology requires additional resources, sensitivity, and background knowledge.

## FURTHER READING

Bechtold, U., Fuchs, D. & Borrmann, V. (2020). Collection of the GoNano policy and industry briefs. Suggestions for realizing RRI conditions in nanotechnology research and innovation, GoNano Deliverable no. 5.5, *gonano-project.eu/wp-content/uploads/2021/01/GoNano-D5.5.pdf*

## CONTACT

**Ulrike Bechtold**
**Email:** *tamail@oeaw.ac.at*
**Phone:** +43 1 51581-6582

IMPRINT: Owner: Austrian Academy of Sciences; Legal person under public law (BGBl. 569/1921 i.d.F. BGBl. I 130/2003); Dr. Ignaz Seipel-Platz 2, A-1010 Vienna; Editor: Institute of Technology Assessment (ITA); Apostelgasse 23, A-1030 Vienna; *www.oeaw.ac.at/ita/en*. | Frequency: The ITA Dossiers are published irregularly and publish the research results of the ITA. The ITA Dossiers are published in print in small numbers only and are made available open access to the public via the Internet portal "epub.oeaw": *epub.oeaw.ac.at/ita/ita-dossiers* | ISSN: 2306-1960 | This work is licensed under a Creative Commons Attribution 4.0 International License: *creativecommons.org/licenses/by/4.0/* | ITA Dossier no. 54en March 2021 | *epub.oeaw.ac.at/ita/ita-dossiers/ita-dossier054en.pdf*| Co-author: Fuchs, Daniela.