

Gender Issues in Nanotechnologies research and innovation



Gender issues in nanotechnologies research and innovation include:

- Male norms and visions of future role and function of technological applications give shape to research ideas and processes thereby missing possibly discriminatory or harmful implications
- The performance and potential of women in science is judged and viewed differently than their male counterparts
- A lack of discussion and awareness on the difference between sex and gender. Gender or “gender equality” refers to the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women, whereas sex refers to the innate biological characteristics

The issue at stake

One of the fundamental conditions shaping our social behaviour is our gender identity. In research and public discourse, the difference between biological sex and socially constructed gender complicates the tasks of addressing the issue of identity. As it stands now, the core values and assumptions in STEM fields (Science, Technology, Engineering and Mathematics) have been fundamentally shaped by men and male norms. This means that innovation processes miss integrating gender and diversity, and the perspectives of large portions of the population are neglected as the gender concept is becoming increasingly variable. Thus, the benefits of differentiating and including issues of sex, gender, and diversity, and of adopting an intersectional approach, need to be highlighted in broader contexts and discourses of policy making and research itself, as well as in the context of co-creation processes.

GoNano strategy and key findings

GoNano succeeded in strengthening inclusion with regards to gender in recruiting participants for the co-creation workshops. But apart from conscious recruitment, it is also important that the co-creation settings themselves take diversity and gender into account (i.e. as the input or information provided) and that viewpoints which differ from the norm and mainstream are actively integrated into the process. Diversity and gender can be addressed as a function of different contexts, positions and roles in life (e.g. religious beliefs) that matter and play a role in opinion making. Including this from the beginning helps to achieve a beneficial and inclusive end-product of the co-creation process.

If the inputs embrace different cultural and intersecting social identities and demographics, different opinions are captured, a broad discourse is fostered and a two-way communication between different perspectives may develop. In practice, the GoNano methodology adopted several strategies to reach participants with balanced information, while also adopting an easily accessible communication style. From a policy relevant structural point of view, it is important to notice that gender inclusion strategies should include both an applied dimension to actually include diverse actors (*Who* is discussing, deciding, doing?) and a content dimension (*What* is discussed? Taking which perspectives into account?).

As the term gender is not equal to biological sex, the approaches of “woman in science” and “gender equality” operate on fundamentally different levels. Gender or “gender equality” refers to the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women, whereas sex refers to the innate biological characteristics (World Health Organisation 2010). This is why the term gender provides the opportunity for more diverse societal roles than by simply differentiating male and female. Therefore, it is also important to note that neither sex nor gender is exclusively binary (male or female, man or woman) but a person can also be intersex or self-identify on a broader gender spectrum. Social identities coin values and concerns towards new technologies, like nanotechnologies. So, someone’s interpretation will differ greatly according to cultural background, roles of individuals and the way these are expressed in society.

Key recommendations on considering gender issues in co-creation processes in research and innovation

Based on its experiences, GoNano has identified the following recommendations as being crucial to normalise the concept of gender diversity in nanotechnology and science in general.

● A balanced and diverse engagement of citizens, stakeholders, organisers, hosts, and facilitators

It is important to provide resources and to support the inclusion of citizens and stakeholders with different perspectives, specific needs, imaginations and wishes which are coined by diverse socio-economic parameters, life contexts, experiences, values and diverse cultural backgrounds (including aspects like ethnicity or religion). Considering diversity allows for an increased innovation capacity which can be better aligned to societal needs and values.

● Implement inclusion as a desirable societal norm

The GoNano engagement methodology showed that gender mainstreaming, equality, diversity, culture and communication are important and should be addressed from the outset. Adopt a strategy for providing targeted resources to support inclusion and engagement systematically in research and participatory projects. This could be of great help to challenge implicit discrimination and gender issues.

● Support stakeholders and hosts who value and promote diversity and inclusion

Stakeholders should acknowledge and promote diversity in research, industry and co-creation in the process. As stakeholders occupy an important and representative role in the process, their communicated attitude towards gender, inclusion and diversity is of utmost importance.



The EU-funded GoNano project (Governing Nanotechnologies through Societal Engagement) aims to align future nanotechnologies with societal needs and concerns. From September 2017 until December 2020, GoNano brought together citizens, researchers, industry, civil society organisations and policy makers across Europe to co-create concrete suggestions for future nanotechnologies.

The GoNano policy briefs present the results of the engagement activities and provide recommendations based on the GoNano experiences. This is the seventh of a series of seven policy briefs. Please see <http://gonano-project.eu/policy-briefs/> for the complete series.



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