Written Evidence Submitted by an Individual Working in Research (DIV0101)

I am a woman, mother of one and I work in a scientific institute based in the UK. I welcome this inquiry into diversity in STEM, however I am concerned that some of the wording is confusing and ultimately undermines the purpose of the consultation.

As noted by the APPG, there is evidence that strongly suggests that "women, certain ethnic minorities, people with disabilities and those from disadvantaged socioeconomic backgrounds" are underrepresented in STEM in both education and employment related to STEM and in order to be able to accurately reflect the numbers in the data gathered, the standard criteria should be applied. I was disappointed to see the word "gender" in place of the protected characteristic of "sex" as it is crucial that any government inquiry recognises the protected characteristics as outlined in the Equality Act and basing their findings on defined terms and not ideologically-based language as this is subjective and not legally defined.

I am concerned that the accuracy of the data gathered in this area, with an inquiry that seeks to establish a recognised imbalance of representation between the sexes in STEM, will be ineffectual if using the principle of "self-ID" to recognise categories of "women" or "female". I consider this likely to have a detrimental effect as it may result in falsely represented numbers of the 'female' category which includes 'males'.

Q: What could and should be done by the UK Government, UK Research and Innovation, other funding bodies, industry and academia to address the issues identified

I share the following recommendations:

1. The Committee consider the process by which grant-funding is awarded and whether funding bodies request that sex is measured, or whether 'gender' or 'gender identity' is used (in place of 'gender reassignment' which is the correct language of the Equality Act); for the purposes of assessing whether 'ideological capture' is evident in the funding process.

    I understand, from a colleague at my own institute, that as a member of the Athena Swan diversity programme, that membership is contingent whether an institute is 'diverse' an Institute can move further up in their scheme (Bronze, Silver, Gold) if 'gender identity' is measured. For further detail, we have a 'trans' staff member and this is considered a 'plus' in terms of diversity, but should this person not have their sex accurately recorded in the data this would result in inaccurate data. (I noted that the female staff member who considers themselves male, did not receive the appropriate

pay increase to be aligned with male employees in similar roles, with similar experience and skills.)

Some funding bodies will only accept applications, or are more likely to award grants, to an Institute which has Athena Swan membership. The Athena Swan website refers to 'gender', 'women' and 'trans people' and it is unclear on their website as to whether Athena Swan would prefer members to record a male trans staff member in the female category, based on self-identification, or whether that male person would remain in the male category.

Any funding body who is responsible for distributing grants should direct applicants to record the protected characteristics of principle investigators and co-investigators accurately. Funding bodies must make it clear that sex is that of biological reality and not a 'self-identified' or 'feeling' of 'gender' and that 'gender reassignment' can also be monitored as a separate category. Principle Investigators and Co-Investigators who are female can have their achievements noted in their own sex class and not have the achievements of males reflected in the female sex category, as by doing so it will appear to be 'false progress' where there is none and more needs to be done to achieve sex-based equality.

2. This data-gathering exercise should be based on legal definitions from the Equality Act to include (and is not limited to) sex (not gender), gender reassignment, race, disability, age and pregnancy and maternity. I consider these to be the most applicable to the Call for Evidence.

3. If recommendation 2 cannot be applied, then (all government) reports must be expressly clear with regards to the data and the categories on which the reports are based. If the category of 'gender' refers to 'sex' this should be defined as whether it is biologically and legally defined or whether the category of 'gender' is measured by self-reporting feelings of an individual. To provide definitions will remove the risk of conflation of the word 'gender' with 'sex' or 'gender identity' or 'gender reassignment'. It will also give researcher the opportunity in the future to discount government report and studies if their definitions do not match the researchers definitions 'gender'. For the purposes of this committee's inquiry, please consider adding a glossary or list of definitions so all those reading and sharing the resulting reports understand the principles of the data gathering exercise.

4. Positive discrimination to ensure that more women, disabled people or people from different ethnic backgrounds may not be effective, unless the skills and experience of the candidates meets the role in STEM.

5. Education and training is a key area. Women could be encouraged into STEM roles if they thought their opportunities were the same as for men, and that the institutes

they were applying to knew what a woman was and that a possible ideological stance, made necessary by a diversity scheme, dissuaded them.

An analysis of UCAS data provided by HESA and earlier WISE campaign data from Women in STEM | Percentages of Women in STEM Statistics - STEM Women shows that women in STEM hovers around the 20% mark, though employment for women in the UK was at its highest measured (72%) in 2019.

Women in STEM workforce:

2016 – 802,848 – 21%
2017 – 864,278 – 23%
2018 – 908,318 – 22%
2019 - 1,019,400 - 24%

Other suggestions could include Universities actively seek out applicants from overseas to enrich the candidate intake. (I think this already happens and there can be a conflict when places are then not reserved for UK citizens, so a balance should be maintained). Even schools, can look at their representation with visiting guests, lessons, materials, as to how different ethnicities are represented, but refrain from insulting people by selecting them based on their skin colour in place of their ability.

If an education drive in ethnic minority areas could be developed sensitively to direct students into STEM subjects, or apprentice programmes be offered in targeted areas, this may create more awareness and interest, but it would require investment and careful thought.

Q: The reasons why these groups are underrepresented

To answer this question with one example I share the following from author Caroline Criado Perez, known for her work in researching the sex-based data gap across a number of areas (from transport to medicine), in her January newsletter she shares the following:

A 2021 paper analysed the "most highly visible COVID-19 media experts in the USA, Switzerland, Greece and Denmark" and found that the most visible media experts did not correlate with the most highly cited experts, aka arguably the ACTUAL EXPERTS, and in fact the majority of these COVID-19 experts had not, as of August 2021, even published anything on COVID-19. Naturally, they were mainly men.

In the analysis of US experts specifically, not a single one *of the female experts who make the top 2% of academically cited experts was found to have featured in the US media.*

Now, we can argue about publication and citation as a fair metric for assessing expertise, but given the media expert sample in question skews so heavily male, I don't think we need to worry about that too much. From Invisible Women*:*

Career progression in academia depends largely on how much you get published in peer-reviewed journals, but getting published is not the same feat for men as it is for women. A number of studies have found that female-authored papers are accepted more often or rated higher under double-blind review (when neither author nor reviewer are identifiable). And although the evidence varies on this point, given the abundant male bias that has been identified in academia, there seems little reason not to institute this form of blind academic audition. Nevertheless, most journals and conferences carry on without adopting this practice.

Of course, female academics do get published, but that's only half the battle. Citation is often a key metric in determining research impact, which in turn determines career progression, and several studies have found that women are systematically cited less than men. Over the past twenty years, men have self-cited 70% more than women – and women tend to cite other women more than men do, meaning that the publication gap is something of a vicious circle: **fewer women getting published leads to a citations gap, which in turn means fewer women progress as they should in their careers, and around again we go**. *(IW, p.96)*

And on that note, I was tickled to spot this line in the paper's methods: "All citation metrics and rankings thereof exclude all self-citations."

Q: The implications of these groups being underrepresented in STEM roles in academia and industry

Simply put, STEM will remain a white man's world. There is progress which I think should be celebrated but in doing so should not mean the work ends.

Lastly, I wanted to note the following observations:

1. Reports reference in the inquiry note percentages and not further breakdowns to a provide fully-representative picture of the representation of women in STEM. The Royal Society's 2014 report notes "Only 27% of the STEM workforce is female compared to 52% of the wider workforce." This is not broken down further into junior positions and positions of leadership.

   My employer has an imbalance in the sexes in both middle management and senior management, as well as fellowships, though there is more even sex-based representation at PhD Student level. We also have reasonable numbers of international students so ethnicities/race (skin colour), religions and I would also include sexual orientations, are broadly represented by staff at my place of work. My employer considers 'gender' to be defined by self-identification and wrongly applies 'gender' in place of 'sex' in HR materials that quote the Equality Act.

2. This same report also refers to 'gender' throughout and no definition is provided so to remove the conflation of 'gender' as 'sex', the glossary does not clarify if this further in my view as it doesn't determine whether male/female is self-identified or recorded based on human biology.

3. The ONS 2020 report refers only to 'gender' with a clear ideological basis for a graph label of "Proportion identifying as female". My understanding of this is that "gender" means self-identified and not biological sex. This is confusing further when reading Transformation Project – The 2021 Census: Assessment of Initial User Requirements on Content for England and Wales:

   "Sex, as biologically determined, is one of the most frequently used and important characteristics the census collects as it is used in most multivariate analysis of data and feeds into the UK population projections. It is critical that the collection of information on gender identity for a small population (estimated to be less than 1%) does not jeopardise the quality of data collected on sex for the population who don't have trans identities or the protective characteristics of gender reassignment."

   As a possible way of explanation of the change from 2020 to 2021, in 2020 the ONS was taken to court by a grassroots women's rights organisation for their census question that conflated sex and self-identification of sex. The judge ordered for the census advice on the "What is your sex?" question to be amended.

In conclusion

Policy and laws are built on data so it is imperative that data accurate represents the reality of the issues that are being assessed. Logic and criteria should be applied as a standard across the area. If an inquiry is looking into the representation of women in work in the fields of STEM then the data collection and definition of 'women' must be standardised and applied 'across the board' so as not to distort the results. If one institute reports sex based on self-identification and another nine report based on biology, then data gathered from all ten institutes is skewed and the exercise rendered meaningless, the effort wasted. It will not further the progress and eradication and resolution of the problems and if it goes unnoticed could potentially result in policy or laws that do not support the groups they seek to monitor and assess.

I agree that the categories of socio-economics, race/ethnicity and disability should be monitored. Another area to consider where discrimination or a sex-based balance could be exacerbated is age. For example, women who are going through the menopause may suffer from different physical symptoms that ultimately affect their work. Women have reported considering leaving their jobs due to a difficulty in performing. (Menopause and the workplace - Committees - UK Parliament)

Should resignations lead to lower figures of female employees being recorded this would be reflected and prove useful when analysing the data. Should one or two male employees self-identify as women and be moved into the female category as a result, this data discrepancy may never been uncovered, particularly if it is recorded in the same reporting period, for a large institute or company that doesn't further analyse this circumstance. It would simply

show as a lower recorded figure of males than the previous reporting period. The reality would essentially be 'buried' in the data and this aim of such reporting would be to inform not to share 'disinformation'.

(February 2022)