

## **Science and Technology Committee inquiry: Diversity in STEM**

### **January 2022**

#### **Who we are**

Fair Play For Women Ltd is a campaigning and consultancy organisation which raises awareness, provides evidence and analysis and works to protect the sex-based rights of women and girls in the UK. Founded in 2017, our work is focused on understanding when and how gender-and sex-based rights conflict in law and policy-making. Our aim is to ensure that everyone's needs are fairly balanced and that women and girls are not forgotten in good policy-making.

The importance of correct data on sex is an area of campaign focus for us. We won a judicial review against the Office for National Statistics in 2021 over its guidance on how to answer the Census question, "What is your sex?". We have given written and oral evidence to the Women and Equalities Committee. We have also contributed to consultations on inclusive data run by the ONS and on the guidance for recording sex and gender identity run by the Office for Statistics Regulation.

#### **Summary**

We welcome this inquiry into diversity in STEM. As the APPG says, there is evidence to suggest that women, and some other groups, are underrepresented in education, training and employment related to STEM. But we are concerned that the APPG report on this issue, and the data on which understanding and the measurement of progress depend, reports on "gender" rather than "sex". It is important that this inquiry defines its terms and adheres to the protected characteristics of the Equality Act including sex.

It becomes impossible to rely on and act upon data regarding the specific issues affecting women and girls if those data are distorted by males self-identifying into them. In STEM where female representation is already low, it is particularly harmful to the interests of women and girls when self-identified gender is recorded instead of sex, or as if it were sex.

#### **Recommendation**

1. Data reporting in support of gender equality, such as that required by Athena Swan, must measure the protected characteristics of sex and gender reassignment separately. It must refer to sex, meaning birth sex, and not to gender, which is ambiguous. Any funding body asking for monitoring or reporting of diversity must direct that the protected characteristics of sex and gender reassignment be collected separately, and that sex means sex at birth. Reporting of self-identified gender as if it were sex should not be accepted.
2. APPG reports should be clear whether the data to which they refer cover birth sex or gender including males who identify as women. It is essential that birth sex and self-identified gender are not conflated in data collection or in analysis.

## **The importance of sex as a variable is universally acknowledged**

The APPG has identified the under-representation of women in STEM. The ONS says,

*“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.”<sup>1</sup>*

## **The conflation of sex and gender leads to poor data**

The reports referenced in the inquiry page both refer to gender rather than sex, and are unclear whether this means sex or self-identified gender. The Royal Society's 2014 report correctly lists the protected characteristics of the Equality Act including sex and gender reassignment. Then throughout the report, it refers to gender (and not sex) which is not a protected characteristic. A definition of gender is not provided. The glossary shows that possible responses are male or female but that does not address the question of whether gender is the same as birth sex, or whether it may be declared as other than birth sex.

Appendix 2 of the 2014 Royal Society report, showing definitions used in the British Cohort Study (BCS70), says “Later BCS70 sweeps record where someone's gender has changed, but no cohort member in the analysis has undertaken gender reassignment.” However, it is very possible, even probable, that as the cohort ages, some of the males will undertake gender reassignment. This is because, unlike obtaining a Gender Recognition Certificate, the protected characteristic of gender reassignment is on the basis of self-declaration, with no legal or medical implications. It is unclear whether “gender” in BCS70 would include all those who report as women in the female category, including males claiming gender reassignment.

The APPG report from 2020 reporting on the ONS, Labour Force Survey also refers only to gender. Figure 15 on page 21 is labelled “Proportion of STEM workers with particular characteristic” but the graph headed “gender” is labelled “Proportion identifying as female” whereas the graphs on disability and ethnicity are stated as those who are, not those who identify as, i.e. “Proportion from an ethnic minority”; “Proportion who are disabled (in line with the Equality Act definition)”. This is a serious shift away from the protected characteristics of the Equality Act, since sex and gender reassignment are two separate characteristics which should not be combined. The clear inference here is that “gender” means self-identified and not birth sex.

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<sup>1</sup> ONS Census Transformation Project – The 2021 Census: Assessment of Initial User Requirements on Content for England and Wales: Gender Identity Topic Report, referred to as ‘Gender Identity Topic Report,’ May 2016

### **This conflation of sex and gender matters in STEM data**

The APPG report says that “Only 27% of the STEM workforce is female compared to 52% of the wider workforce.” This female workforce is distributed unevenly. The Royal Society report shows female representation falls away at senior levels in academia despite being well-represented at junior levels.<sup>2</sup> In some disciplines, good female representation at undergraduate level declines through the levels of progression to become very small at professor level. Mineral Metallurgy and Materials goes from 54.6% female undergraduates to 10.4% at professor level; Agriculture and Forestry from 50.6% to 8.8%; Mathematics goes from 40% to 7.4%; Chemistry from 43% to 7.9%. In others, such as most forms of engineering, a large sex disparity is present at every level, indicating a different challenge which will require a different solution.

It is possible that trans-identifying people are also under-represented in STEM. Or they may be over-represented. We don't have the data. Only data can show whether there are issues, but if there are, they are not the same as those faced by females, such as the challenges triggered by maternity, itself a separate protected characteristic for good reason. Without such visibility, the issues cannot be correctly identified nor action taken to address them. Therefore they should be tracked separately.

### **This distortion of the data is likely to get worse if action is not taken**

The APPG seeks inputs on what has been done to address underrepresentation of particular groups in STEM roles, and on what could and should be done. If accurate data on sex is not recorded, it will simply not be possible to know whether increases in female representation are down to actual improvements in female representation or to a small proportion of males being recorded as female.

This matters more when the sex split is highly unequal. This can be illustrated using the data provided by the APPG. 91% of the engineering workforce is male<sup>3</sup>. Just 2% of the males moving into the female data would show as a 20% increase in female representation. (2% of 91 = 1.82, which is 20% of 9.)

In technology 79% of the workforce is recorded as male in 2019. But it is widely reported, albeit mainly anecdotally<sup>4</sup>, that trans-identifying males are more prevalent in tech than in other sectors. (Google *why do so many transgender women work in technology* to see multiple threads agreeing with the premise and trying to explain it.)

This is a particular risk for the data relating to seniority, since females at senior levels are so under-represented. The Royal Society report shows that only 6.3% of professors in Electrical Electronic and Computer Engineering are female. Just 1% of the males being counted as women would misleadingly suggest a 15% improvement (1% of 93.7% = 0.937 which is 15% of 6.3.)

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<sup>2</sup> Royal Society report Table 6, page 38, Source: Oxford Research & Policy (2013), STEMM higher education pipeline data 2011 – 12).

<sup>3</sup> APPG report p 10, Figure 3: The composition of the engineering STEM workforce in terms of age, disability status, ethnicity and gender, UK, 2019

<sup>4</sup> For example <https://www.siliconrepublic.com/people/trans-people-tech-gaming>

There is evidence that transition from male to identification as a woman is more prevalent in older men. A US study shows 45-49 as the modal age for males transitioning<sup>5</sup>, i.e. more males of that age group than any other undergo gender reassignment surgery of any kind.

Given this, it is possible that older, more senior males claiming gender reassignment or undergoing transition are being counted as female. Distortion of data and trends by counting gender rather than sex will be amplified in this age group, appearing to show improvements in female senior representation when that is not the case.

## **Conclusion**

It is clear that females are under-represented in STEM. Tracking and monitoring their representation is an essential, indeed foundational, element of identifying, understanding and addressing the issues that lead to under-representation. This is not just a question of equality but of maximising potential and harnessing talent, for the good of all. Therefore it is a matter of national importance.

But it becomes impossible to rely on and act upon data regarding the specific issues affecting women and girls if those data are distorted by males self-identifying into them. In STEM where female representation is already low, the distorting effect of recording self-identified gender instead of sex, or as if it were sex, may well be significant.

Programmes like Athena Swan membership and reporting are intended to help address the sex inequality in STEM. Such reporting is increasingly required by funding bodies. It is therefore essential that the data they specify, designed to promote “gender equality”, is a true measure of that which it seeks to address, namely representation of the sexes. If gender reassignment is thought to be an area meriting such attention, that can be done separately.

The Royal Society report recommends “Consistency between the definitions of and variables within diversity characteristics” in future studies to enable comparison and combination of different data sets. We agree, and would suggest that the APPG has a golden opportunity to direct the use of the protected characteristics in the Equality Act in collecting such data. Only this will ensure each is correctly measured and understood so that effective action can be taken.

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<sup>5</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6377379/>