18 January 2019

Dear Norman,

RE: Science and Technology Select Committee

Thank you for your letter of 20 December and for confirming the Science and Technology Select Committee’s public evidence session on 30 January.

I am aware an evidence session with my predecessor Sam Gyimah had been planned for 11 December and that you had run a public engagement exercise on Twitter to source questions, via #AskSamGyimah, in the lead-up to this session. Please find responses to the questions you raised in your letter of 20 December, in the accompanying annex. My response to your concerns surrounding ‘No Deal’ Brexit preparations can also be found in this annex.

I look forward to working with you and the Committee in my role as Minister and to meeting with the Committee on the 30th.

Yours ever,

CHRIS SKIDMORE MP
**Twitter Questions**

**How much will it cost for the UK to build a Global Navigation Satellite System?**

Initial analysis that has been undertaken in partnership with UK industry indicates that a UK Global Navigation Satellite System could cost between £3bn-£5bn over a ten-year build phase.

**What are the Government's plans to increase the numbers of women and those with disabilities and diversity in respect of social class in STEM subjects?**

We are determined to boost the number of women taking STEM-related subjects and courses, and as such have invested in maths, digital and technical education. Government funds the Stimulating Physics Network, which has a specific strand focusing on increasing the number of girls’ in physics A level and includes:

- improving the confidence and resilience of primary and secondary school girls in relation to physics;
- developing physics teachers’ awareness of inclusive teaching techniques; and
- whole-school projects to raise awareness amongst all staff of gender stereotyping, unconscious bias, sexist language and developing options to address them.

We are also funding programmes in schools and colleges:

- to increase the take-up of maths (such as the Advanced Maths premium), computing and physics;
- to support better teaching of maths, science and computing in schools, including a new £84m programme to improve computing teaching

We are taking steps to engage with the sector through Apprenticeships and using the employer Apprenticeships Diversity Champions Network, now employing 70 members, to champion gender representation in industries where improvement is needed.

Additionally, BEIS supports a range of initiatives, such as STEM Ambassadors and CREST Awards, to encourage and support people from under-represented groups, including young women, people from BAME backgrounds, those with disabilities and people from less privileged socio-economic backgrounds to both study STEM subjects and to consider careers in Science and Engineering.

**How does the Government respond to research which shows that Triple Science is limiting participation in post-16 STEM?**

The Government is happy to consider any published research that considers the impact of GCSE triple science on the take up of STEM subjects post-16. We are not aware of any quantitative research that proves that triple science is limiting participation in STEM post-16. Furthermore, looking at science subjects alone, evidence and research, as summarised in NAO’s 2010 ‘Educating the next generation of scientists’ report, suggests that pupils who study triple science are more likely to choose and succeed in science at A-level and degree level.
Take up of triple science has increased considerably in recent years with over 27.4% of pupils from state funded schools taking this option in 2018 compared to just 16.5% in 2010.\(^1\) Over the same period, we have seen more pupils going on to take science A levels with entries to physics increasing by 23%, chemistry by 21% and biology by 8%.\(^2\)

We want to build on this success so that even more pupils have the opportunity to take GCSE triple science. Similarly, we want to ensure that more pupils are able to progress to study A levels in science – regardless of whether they have entered triple or combined at GCSE. That is why we are continuing to fund programmes that will help us achieve these aims. This includes support to schools through the network of Science Learning Partnerships to help them deliver triple science to more pupils and also to improve the quality of science teaching more generally, which is critical to improving engagement in science at all levels. There is also the Stimulating Physics Network which aims to improve the quality of physics teaching in those schools that have poor rates of progression to A level physics. This network is also testing out different strategies that aim to engage more girls in physics post-16.

**How will the Government ensure that the scientific establishment deals with bullying, discrimination and sexual harassment?**

Universities, research organisations and institutions have a “duty of care” for their employees, including for those employed as researchers, and a number of responsibilities under the Equality Act 2010 and the Health and Safety at Work Act 1974. Dealing with bullying, discrimination and harassment falls within their legal and other responsibilities as employers. Funders of research, such as UKRI, also have a responsibility to make sure that their policies and instruments do not contribute to issues, and funders take these responsibilities very seriously (e.g. through the extensive Equality & Diversity provisions in the Research Excellence Framework). UKRI also carry out equalities impact assessments on major new initiatives.

UKRI has published terms and conditions for its employees which includes guidance and policies on a range of issues including “Bullying and Harassment”, “Equality and Diversity” and “Equality and Diversity in Research Funding”.\(^3\) UKRI has reiterated expectations and requirements of grant recipient institutions for compliance with the “Concordat to Support the Career Development of Researchers”, “Equality Act 2010” and Health and Safety, under its Terms and Conditions for grant funding.\(^4\)

UKRI is undertaking further work on issues of bullying and harassment, and their most recent public statement confirmed that “Our immediate work includes developing a detailed policy response on bullying and harassment and we are in the process of commissioning an evidence review to ensure that we draw on existing knowledge and identify gaps in our understanding of the challenges that need to be addressed,” Jennifer Rubin, Executive Chairwoman of the Economic and Social Research Council. The evidence review has now been commissioned and work is underway. The review will inform the approach and range of methods that UKRI may apply in this area.

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3. [https://www.ukri.org/about-us/working-for-us/terms-and-conditions/](https://www.ukri.org/about-us/working-for-us/terms-and-conditions/)
4. [https://www.ukri.org/funding/information-for-award-holders/grant-terms-and-conditions/](https://www.ukri.org/funding/information-for-award-holders/grant-terms-and-conditions/)
The Royal Academy of Engineering (which is also responsible for distributing science funding from BEIS) has produced a positioning statement on harassment and bullying which applies to engineering as a profession.5

**What evidence is there that the REF has improved scientific research by emphasising impact?**

The period during which the UK has assessed research nationally through the Research Assessment Exercise and now the REF has coincided with a significant increase in both the quantity and citation impact of UK research (*this can be taken to correspond to 'improved scientific research'*). This is evidenced through the various reports on “International Comparative Performance of UK research Base” commissioned by BEIS from Elsevier – most recently published in 2017 and success of UK in securing EU research and innovation funding, including from European Research Council.6

The introduction of impact in REF has occurred relatively recently, and attributing the effects of this is complicated because of the time lags and the effects of the wider research context in terms of research timelines, but evidence suggests:

- continued high performance in traditional measures of academic excellence
- increased focus and resourcing of activities related to impact (*evidenced by RAND evaluation of REF2014*); and
- continued strong performance of research system in terms of impact related activities (*evidenced through annual Higher Education - Business and Community Interaction HEBCI surveys.*”

**‘No Deal’ Brexit preparations**

**UK equivalents of EU grant schemes**

On the subject of those areas of Horizon 2020 which the UK would not have access to as a third country, ERC, MSCA and the SME Instrument are highly valued by researchers and businesses and play a significant role in the UK’s diverse funding landscape. The UK is the leading recipient of ERC funding since its inception securing c.€1.5bn to date, or 20.5% of the total funding awarded.

Therefore, the Government is considering what other measures may be necessary to support UK research and innovation in the event that the guarantee and the extension are required. We have been working with stakeholders to identify appropriate short-term measures that could be put in place if needed immediately after EU Exit. These discussions are ongoing.

We also want to explore the option of association to Horizon Europe when it comes into force, which we expect to include ERC, MSCA and SME support programmes, as part of our continuing relationship with the EU on science and innovation. The Horizon Europe proposals are currently in the early stages of negotiation in the EU Institutions.

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Talks with the European Commission

Our conversations with EU partners are focused on delivering the deal, which remains the Government’s top priority. UK and EU counterparts constantly engage on a range of issues related to Brexit and will continue to do so.

As a responsible Government, the UK is engaging with EU bodies and Member States on contingency preparations in a range of areas. There are many issues where joint technical and operational discussions between UK and EU experts are necessary such as continuation of collaboration in science and research. We stand ready to deepen and intensify these discussions as necessary.

Current Horizon 2020 regulations allow for project coordinators in third countries to receive funds from the EU and distribute them to partners in collaborative projects. We would look to clarify the practicalities of this with the Commission.