CaSE Response
Fulfilling our Potential: Teaching Excellence, Social Mobility and Student Choice

About CaSE

The Campaign for Science and Engineering (CaSE) is the leading independent advocate for science and engineering in the UK. CaSE believes the UK government should support a healthy and thriving science base in which all parts of this integrated system are well funded and performing optimally. The extraordinary and well-documented success of the UK science base is founded on historic strength, past investment and valued principles for allocation of funding. We therefore welcome the opportunity to respond to this consultation which includes proposals with the potential to have wide reaching effects on the health of science and engineering in the UK through proposed changes to research, teaching and higher education structures. In preparing our response, we have received input from our members across the science and engineering sector. In this document we respond to questions contained in parts A, C and D of the consultation.

CaSE works to raise the political profile of science and engineering, and ensure that the UK has world-leading research and education, skilled scientists and engineers, and successful innovative business. It is funded by around 800 individual members and 100 organisations including businesses, universities, learned and professional organisations, and research charities. Collectively our members employ 350,000 people in the UK, and our industry and charity members invest around £19.3bn a year in R&D globally[1].

Summary of key points

- There is wide support for renewed focus on teaching quality in higher education, however, there is a strong view that the the proposed teaching excellence framework (TEF), as described in the Green Paper, would not achieve its stated aims.
- TEF should focus on improving the quality of teaching through recognising and rewarding high quality teaching. Widening participation and social mobility are rightly a focus for the Government and the sector, but should be addressed separately.
- The proposed mechanistic link between fees and TEF outcomes should be reconsidered as it is not sustainable to put in place a system in which only the highest performers are able to maintain real terms funding per student. This is particularly concerning for high-cost subjects.
- Care and sufficient time must be taken in developing measures or metrics for inclusion in phase 2 of TEF as they will be drivers of change within institutions. They must be valid measures of teaching quality, and carefully tested and piloted over time.
- Considering the substantial shift in funding flows and composition of the higher education sector, reconsideration of the system architecture seems appropriate.

[1] Figures taken from latest available years of data

- There should be an overarching body with oversight of the higher education sector and responsibility for integrity of the whole sector.
- Changes to the research funding landscape as proposed in the Green Paper and in the Nurse Review provide an opportunity to embed dual support in the constitution of Research UK.
- Close engagement with the sector regarding detailed plans, implementation and timescales following the Nurse Review would be prudent and expected considering the openness of many of its recommendations.

Part A: Teaching Excellence, Quality and Social Mobility

There is wide support for renewed focus on teaching quality in higher education and on continuing improvement in teaching quality for the benefit of students and the wider economy and society. There is some support for introducing a mechanism to achieve this by recognising and rewarding excellent teaching. However, there is a very strong view that the the proposed teaching excellence framework (TEF), as described in the Green Paper, would not achieve these aims. We therefore welcome the opportunity this consultation provides the sector and recommend further close dialogue with the sector as plans for the TEF are developed and refined.

Changes to the fee regime, we're told by some members, has already begun to have the effect of raising the relative priority of teaching – including investment in teaching estate and facilities. The Green Paper recognises this, but wants to accelerate progress. This is a welcome aim, but there is broad concern that rushed implementation to meet arbitrary deadlines would be short-sighted, missing an opportunity to create a system which achieves the stated aims and carries the confidence of the sector and those is serves.

Support for the aims of TEF

The Green Paper outlines the dual aims of raising the quality of teaching in higher education and improving access, retention and progression for students from disadvantaged backgrounds and underrepresented groups and proposes tackling both through one mechanism, the TEF.

We strongly support each of these aims. However, we do not think they are best served by being combined into one mechanism. Instead, we would strongly recommend separating policies for driving teaching excellence from measures to widen participation.

Much of the work needed to widen participation and improve access, retention and progression will be entirely unrelated to course content or teaching quality. Also measures relating to widening participation and retention will not be valid measures of teaching quality. Therefore, conflating the two could lead to missing the target on improving either.

There remains a stubborn link between educational attainment and socioeconomic background in the UK[2]. De-coupling performance in science and mathematics (and other subjects) from socioeconomic background would be a landmark achievement and a step towards social justice for the UK. Improving social mobility by raising all children to current average levels of educational attainment could contribute £56 billion a year by 2050, the equivalent of 4 per cent of UK GDP.[3] When one in six children in the UK – 2.3 million – is officially classified as poor, it exacts a high social

[2] Improving Diversity in STEM, Campaign for Science and Engineering, 2014 http://sciencecampaign.org.uk/CaSEDiversityinSTEMreport2014.pdf

[3] State of the Nation, Social mobility and child poverty in Great Britain, Social Mobility and Child Poverty commission, 2013

price. Considering higher education in particular, there is a premium attached to a degree[4] and in addition STEM graduates typically earn higher wages than non-STEM graduates[5].

We, therefore, fully support the Government's ambition to widen participation and improve retention and outcomes to drive social mobility gains. However, these require proper support through targeted funding, such as the student opportunity fund, and targeted interventions to enable universities to provide the, often complex, support these students need. We welcome the government's focus but also recognise that recent policy changes, such as changes to the Disabled Students' Allowance, and maintenance support, could make this ambition more challenging to achieve.

TEF should focus on improving the quality of teaching, through recognising and rewarding high quality teaching. We believe the TEF should explicitly aim to raise the quality of teaching in every institution. This is necessary to ensure that the TEF benefits all students, rather than improving teaching in some institutions at the expense of others.

Improvements in quality of teaching will necessarily involve investment. The government has already recognised this through its recent competition for teaching capital funding and through its institution specific funding stream for institutions that 'provide world-leading teaching and require support at least to maintain this position, but ideally to improve it further'[6]. However, the Green Paper's proposals would inevitably result in the majority of the sector receiving a real terms cut to teaching funding year on year. Even the highest performing institutions in the current TEF proposal will only be able to maintain current levels of funding. It is not sustainable to put in place a system in which only the highest performers are able to maintain real terms funding per student. Further, such a system is unlikely to deliver the sustained and cross sector improvements in teaching quality that the TEF aims to achieve.

This is particularly concerning for high-cost subjects which include laboratory and fieldwork based subjects such as science and engineering. However, in the proposed system, degree courses that cost more than the value fee and high-cost subject premium per person per year to deliver will increasingly run at a loss to the institution, as has been the case in recent years despite protection of high-cost subject funding[7].

Under the proposed mechanistic link between TEF level and fee, rather than TEF being a driver of increasing quality across the board, those given more will be able to improve, and others will not. The losers will be students who will have less choice of courses offering high-quality teaching. The driver for institutions will also be to shift provision away from subjects that cost more to deliver, perhaps resulting in reduced choice of STEM provision, which would not be in line with Government's focus on increasing the number of young people studying and progressing in STEM subjects.

Further, for differentiation by fee to be meaningful – and indeed fair for students on different courses at the same institution - it needs to be at course level as teaching quality measures could

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[4] http://www.millionplus.ac.uk/documents/reports/Value_of_a_UK_degree_Full_report.pdf

[5] Impact of University Degrees on the Lifecycle of Earnings, BIS 2011 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229498/bis-13-899-the-impact-of-university-degrees-on-the-lifecycle-of-earnings-further-analysis.pdf

[6] http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/2015/201510/HEFCE2015_10.pdf

[7] http://www.rsc.org/globalassets/04-campaigning-outreach/policy/education-policy/university-chemistry-and-physics-finances-policy-briefing.pdf

vary greatly across a university. However, this would be a major departure from our current system of institutionally set fees and require wide public and parliamentary debate.

As a result of these combined factors, some members expressed concerns over linking TEF outcomes to fee increases, with others concerned about introducing a multi-tiered fee structure based on TEF outcomes.

We therefore recommend:

- The Government reconsiders the mechanistic link between higher TEF outcomes and the ability to raise fees, perhaps focusing on reputational incentives and addressing the falling value of fees with inflation separately.
- The Government continues to support high-cost subjects through sufficient additional funding to ensure that science and engineering courses, and others that cost more than the maximum fee level to deliver, are sustainable to provide and aren't run at a loss to institutions.

Measuring teaching quality

Success of TEF will depend on the quality of information that informs it. Evidencing good teaching requires demonstrating and evaluating both the teaching-related activity itself and, importantly, the impact of that activity.

As they will be drivers of change within institutions, any measure included in the TEF must be valid, in that it actually measures teaching quality. Valid measures must then be able to be accurately measured and provide reliable data, or be able to be given due consideration as part of 'additional evidence'. As teaching practice and quality can greatly vary within institutions, assessment in the TEF should be at discipline level where possible to ensure the assessment is credible and that published information is meaningful to students. For instance, any measure of the quality of teaching on science and engineering courses would have to reflect on the quality of laboratory or fieldwork-based teaching.

The proposal for the initial phase of TEF based on quality assurance is widely viewed as workable.

The proposals for phase 2, as set out in the Green Paper, do not deliver a mechanism to measure and reward teaching excellence. One of the main concerns is that the many of the proposed measures are robust, but are not valid measures of teaching quality.

We support the principle of ensuring, where possible, that the TEF is light touch. And we recognise that using existing data sets, such as those collected on employment, student satisfaction and other factors detailed in Unistats Key Information Set, would help reduce the burden on institutions. However, where measures are demonstrably not valid measures of teaching quality, they should not be included. This is to protect institutions from reputational and financial damage based on a flawed assessment of their teaching quality, and to ensure the system does not encourage institutions to divert effort towards raising their performance in certain metrics rather than truly improving teaching quality.

It is understood that there will be further consultation with the sector on iterations of the TEF beyond phase one. Given the seriousness of the consequences, beyond phase 1, careful testing and piloting of any proposed metrics or measures prior to wider implementation would be prudent. This was the approach that was used to integrate the assessment of impact in to assessment of research excellence, and represents good practice.

The Green Paper asserts that "outstanding teachers should enjoy the same professional recognition and opportunities for career and pay progression as great researchers". The low status and undervaluation of teaching contributions, compared with research, in recruitment and promotion disadvantages many academics who use teaching as a strand of evidence for progress in their academic career. It also provides an active disincentive for academics to invest time in teaching and developing their practice and, in turn, improving teaching quality. So including measures based on teaching and developing of professional practice – such as through senior HEA fellowships or institutional recruitment and promotion practices – could be beneficial.

Some work focusing on the life sciences has shown the mismatch between the recognition of research and teaching achievements in career progression, but also that considerable diversity exists between institutions on the extent and criteria for rewarding excellent teaching[89]. Research has also shown there have been changes to written promotion criteria in recent years, with a larger number of institutions specifying promotion through teaching routes, and there is evidence that professorial promotions through this route have begun to emerge. Examples have been collected and published to highlight best practice in the life sciences[10].

Accreditation by Professional and Statutory Regulatory Bodies (PSRBs) is widespread in science and engineering courses and acts as a marker of courses that meet the high standards in teaching and learning set by the accrediting body. This would be important evidence to consider in the additional evidence that an institution submits. In development of TEF phase 2, there could be valuable insight gained from close collaboration with PSRBs and learning from the markers of quality they have developed for accreditation criteria.

There is an opportunity to build in learnings from experience of measuring research excellence, which has gone through a number of iterations to date and will be considered again this year[11]. Lessons include ensuring that the outcome of TEF results in continuous grading rather than step-grading, that disaggregation by subject is essential if it is to be a meaningful measure, and ensuring collection and measurement is proportionate and does not reduce staff capacity, in this instance for delivering high quality teaching.

There are also lessons to learn from the regulation and measurement of teaching quality in schools where a system of high bureaucracy and low professional trust has developed. Any system must learn the lessons of respecting teachers as professionals, building professional trust, appropriate reward and recognition processes and sufficient support for professional development into any system of quality enhancement[12].

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[8] http://www.acmedsci.ac.uk/policy/policy-projects/redressing-the-balance-the-status-and-valuation-of-teaching-in-academic-careers/

[9] https://www.physoc.org/sites/default/files/page/Improving_the_status_and_valuation_of_teaching_in_the_careers_of_UK_academics_WEB_version.pdf

[10] http://www.physoc.org/sites/default/files/page/Recognising%20Teachers%20FINAL.pdf

[11] One caution here is that the REF seeks to fund only excellent research, whereas a TEF, as previously discussed, should aim to improve teaching at all institutions meaning the link with financial reward will be different.

[12] Vision for Science and Mathematics education, The Royal Society, 2015 https://royalsociety.org/~/media/education/policy/vision/reports/vision-full-report-20140625.pdf

Part C: Simplifying the Higher education system architecture

Considering the substantial shift in funding flows and composition of the higher education sector, reconsideration of the system architecture seems appropriate. In any changes, retaining expertise and knowledge within HEFCE will benefit the transition and future delivery.

Overview of HE system as a whole needed

The proposed architecture lacks an essential feature; there is no overarching body with oversight of the sector and responsibility for integrity of the whole sector. This should be reconsidered, ensuring that there is a body with responsibility for overseeing universities as institutions and the integrity and health of the sector as a whole, including provision across disciplines.

Built in teaching and research links

Throughout the Green Paper there is recognition of the benefits to both teaching and research, and therefore to students and the wider economy, of close links between two and yet, the architecture as proposed removes any structural link. Within the new architecture, a mechanism should be created to ensure the link between teaching and research is built in to the system and actively supported.

Cross cutting functions

There are a number of important functions currently carried out by HEFCE that cut across teaching, research, knowledge exchange and public engagement, including the Higher Education Innovation Fund. It is unclear from the green paper how these activities will be delivered going forward and where responsibility would rest. It should also be clarified which body would have responsibility for allocating capital funding that has previously been done through HEFCE, such as RPIF or STEM teaching capital, and the mechanism for doing so.

Regarding the allocation of the teaching grant, mirroring the process with HEFCE, the BIS minister should set the strategic priorities and then allocation responsibilities should be divested to the Office for Students, overseen by an independent board.

Part D: Reducing complexity and bureaucracy in research funding

We support the reassertion in the Sir Paul Nurse's Review of the Research Councils of the importance of upholding the Haldane principle, of funding excellence wherever it exists, and maintaining the integrity of the dual support system. Many of the proposals contained within the Nurse Review were top level and would need further detailed consultation with the community prior to implementation. It will also be essential to ensure that the timescale of implementation ensures there isn't any disruption to funding flows.

Dual support

We welcome the Government's recognition of the importance of maintaining the dual support system. Changes to the research funding landscape as proposed in the Green Paper and in the Nurse Review provide an opportunity to embed dual support in the constitution of Research UK. In practice, for dual support to be safeguarded it requires there to be separation of responsibility and allocation for distributing research council funding and funding for QR. We would favour hypothecation to ensure that dual funding streams, along with their distinctive characteristics, are maintained. This could be achieved by creating a separate body that would sit within the Research UK umbrella that would run the REF process, distribute QR, and also be tasked with working closely with the Office for Students to maintain a structural link between teaching and research. This would

also be prudent considering the UK-wide remit of the Research Councils and Innovate UK, but the England-only remit of QR.

QR

For dual support to be maintained in practice, there must continue to be significant QR funding, with the balance of funding between QR and Research Council activity funding maintained. This unhypothecated funding provides essential flexibility to universities and research institutes. It enables them to explore new avenues of research and to meet the on-going costs of research conducted, for instance, in collaboration with industry, small companies or charities. Indeed, elements of QR such as the Charity Research Support Fund are essential in maximising substantial charity investment.

Research Councils

The Government has announced it would implement Nurse recommendations, however, as many details were left open in Sir Paul's report, close engagement with the sector regarding detailed plans, implementation and timescales would be prudent and expected.

We welcome the proposal that the Research Councils' maintain their independence and integrity, remaining as separate bodies under the umbrella of Research UK. Research Councils, and in turn UK research, has benefitted from leadership by high-calibre scientists with authority and responsibility for providing leadership for their disciplines. These roles must be shaped to continue to attract such individuals if UK research is to continue to benefit from high-quality leadership. A key aspect of this will be the level of autonomy granted to the leaders of the individual Research Councils. In particular we would support the recommendations set out in the Nurse Review that holding multi-year budgets and discipline leadership should be preserved at the level of the individual Research Councils, to maintain the benefits and strengths derived from autonomy. Individual Research Council leaders must also retain the ability to employ staff and run facilities directly.

Inter-disciplinary and multi-disciplinary research was an area the triennial review of the research councils highlighted could be built on. Proposals for cross cutting funds described in the Spending Review and recommended in the Nurse Review have not been set out in detail. Development of cross cutting funds should:

- Draw heavily on the Research Councils plans for a grand challenges fund
- Engage research councils and the wider research community
- Ensure that there is sufficient resource and capital funding for individual Councils to support research within their discipline. This will also benefit the quality of inter-/multi-disciplinary research in future as it requires ongoing strength within disciplines.
- Provide an opportunity for the new Research UK body to take a cross-cutting strategic role on issues such as quantitative skills, data science and statistics which cut across research councils

Innovate UK

There could be great benefits to closer alignment of research and innovation agendas. To achieve this, it will be vital to ensure that structures continue to reflect and support the distinct mission and stakeholders of Innovate UK as compared to the Research Councils. As articulated in SR15, the Innovate UK budget should be separate from any research funding for which Research UK has responsibility.

Devolved considerations

Measures should be put in place to address any conflicts of interest or bias arising from one body having responsibility for UK-wide research funding through the Research Councils and English QR funding. At present HEFCE interacts with equivalent bodies in the devolved administrations contributing to a cohesive UK research environment. This must be actively maintained in any new structure. Further, the UK-wide strategic role of Research UK should be reflected in the governance of the new structure.

Research strategy and governance

The pre-eminence of the UK across science and engineering disciplines is founded on long-held principles of allocation of funding for research on the basis of excellence as judged by expert peers. The Haldane principle refers to the benefit of research being conducted independently from Government. It has developed to state that the research community determine which projects receive state support; whilst Government sets the overarching strategy. In this context, the proposal in the Nurse Review for the creation of a Ministerial Committee is an opportunity to improve strategic decision-making.

It also provides an opportunity to address an anomaly in UK government research funding: the decline of investment in R&D across government departments[13]. Departmental R&D spending makes up about 40% of the Government's total expenditure on R&D[14]. Between 2009/2010 and 2011/12, half of all departments reduced R&D expenditure by 20% or more, with some cutting by as much as 50%[15]. This picture has not significantly improved since and is a continuation of a longer-term trend that could be damaging the Government's ability to respond to new challenges.

As recognised in the 2014 Science and Innovation Strategy, departmental R&D spending is currently poorly protected from short-term budget cuts despite its importance to the everyday effectiveness of Government. This investment joined-up across government is also essential to achieving some of this Government's major challenges, from tackling antimicrobial resistance or the challenge of housing the population, to future proofing transport systems and creating high quality jobs, rely on scientists or engineers, or would benefit from advances in science and engineering.

These budgets must therefore be rightly prioritised. This currently isn't the case as budget allocation and management isn't transparent or consistent across departments. The ministerial committee could provide strategic oversight of R&D budgets across government departments and ensure they are sufficient to provide effective intelligence support for policy and funding decisions.

In the interests of transparency, as well as to facilitate good stewardship of public funds, the Government should adopt a more stable and transparent mechanism of allocating research capital investment. The mechanism should be in line with the principles discussed above (the Haldane Principle) and the Government's strategic science and innovation priorities. This would also be in line with the wider government drive towards transparency and open policymaking.

Capital should not be directed at new initiatives at the expense of investment in maintenance and upgrade of existing scientific infrastructure. This underpinning investment is essential to reap the full

[13] http://sciencecampaign.org.uk/?p=13593
[14] http://www.ons.gov.uk/ons/dcp171778_370646.pdf
[15] http://sciencecampaign.org.uk/documents/2014/DepartmentalR&Dexpenditure2011-12.pdf

value and benefit of prior public investment, ensuing efficient and effective stewardship of tax-payers' funds.

REF

We broadly support maintaining the REF2014 format for the next cycle. In particular, it is essential that peer review continues to be the defining feature of any future REF. We would not support a fully metrics driven system. Indeed, the costs of REF could be reduced perhaps by resisting substantial changes, as sunk costs need to be taken into account when assessing the cost-benefit of any changes to the system. This would mean that university leaders and researchers would not have to invest additional time navigating a new system, taking them away from their core roles. There are certainly lessons to learn from the most recent exercise which could reduce burden and costs further, and we welcome the opportunity for sector engagement in further consultation later in the year.

This response was prepared by Naomi Weir on behalf of the charity and membership organisation, the Campaign for Science and Engineering (CaSE).

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