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CaSE
Campaign for Science and Engineering

Nick Clegg's letter to CaSE – Election 2010

Below is the Liberal Democrat response from Nick Clegg to the CaSE letter to the leaders.

14th April 2010

Dear Prof Griffiths and Mr Dusic,

Thank you for your letter of 5th of March, which asked for an articulation of my party's policies on science and engineering. Following the launch of our manifesto today, it gives me pleasure to enclose a full written response. I hope this will prove useful to you, your members, and to the wider public, in judging which of the political parties is best placed to secure the scientific and engineering future of our nation.

As you will know from my speech at the Royal Society earlier this year, the Liberal Democrats recognise that science is an integral part of our economic recovery, as well as being vital to a healthy, modern society. To achieve these aims, science and engineering must be considered as prime elements of Government planning, not as bolted-on after-thoughts. My Liberal Democrat colleagues in both Houses of Parliament – Evan Harris, Phil Willis, Baroness Sharpe and Lord Taverne – have been at the forefront of arguing for this agenda, and we believe that we have not only the fairest and most effective, but also the most honest policies on science.

May I take this opportunity to pay tribute to you both, and the excellent work that CaSE does in advocating the importance of science and engineering in public policy. I know that you have worked closely with politicians of all stripes, including from the Liberal Democrats, and was delighted with the success of your cross-party debate earlier in the year. I am sure I join with many across the science and engineering community when I say that I hope that you continue this excellent work in the new Parliament.

With best wishes,

Nick Clegg

Leader of the Liberal Democrats

Educating the next generation in Science Technology, Engineering, and Mathematics

1.1 Liberal Democrats believe that the key to ensuring a solid education in STEM subjects for students across the country is to break the vicious cycle of there not being enough specialist science teachers, leading to fewer pupils studying science subjects or succeeding in them, and then not enough of those students going on to study science at University – which in turn limits the availability of good science teachers.

1.2 We would seek to ensure that all teachers who teach science at GCSE-level or higher are either science graduates, or have other appropriate training. We would make sure that head teachers have the appropriate resources to make this happen, including via more flexible teacher training budgets.

1.3 Currently, some teachers in shortage subjects such as science are given a 'golden handshake' starting bonus, which helps drive recruitment. But this isn't the best way to encourage graduates to stay in the profession – too many teachers leave after just a few years. We would divert the money currently used for starting bonuses into subsidising the repayment of student loans over a number of years. We would also abolish tuition fees over six years, making teaching a more attractive proposition to graduates currently deterred by a high debt burden.

1.4 Better teaching would also help address the related problem of some bright and able students being forced to take only basic science GCSEs when they would excel in taking Physics, Chemistry and Biology as separate subjects. We would seek to ensure that every single child has the opportunity to study these sciences individually.

1.5 We are also concerned that standards in school science may be being reduced, as a perverse consequence of the competition between the different exam boards. Such a system incentivises schools to pick boards which offer better results. Liberal Democrats would review the operation of this market, as it as vital that our standards are the best and clearest anywhere in the world.

1.6 We will not generate the number of scientists and engineers we need until we recognise and tackle the shortage of women working in these fields. Only 35% of young people applying for STEM subjects are female, despite young women doing better in their science A-levels than young men. We are concerned that this is in part due to gender stereotyping of careers throughout education. We would therefore seek to begin auditing the quality of Careers Advice available to young people so that we can identify the worst performing schools, and give them support from role models and advocates from industry, charity, and the public research sector.

1.7 Liberal Democrats would also abolish tuition fees over a six year period. We see them as unfair and a regressive tax on education. The debt which students incur because of fees disproportionately impacts on young women and on the less economically privileged. Such debt distorts career choices, and leads the best science graduates to high paying careers in the City, rather than pursuing what we see as more economically important, but lower paid, careers in science, technology, and engineering. With that constraint removed, we would look to see more young researchers, and more young science teachers inspiring the next generation of scientists.

1.8 There is a real problem with the closures of – or threats of closure to – physics and chemistry departments at universities. This undermines the opportunity of students to study these subjects in their own region and reduces the volume of science teaching, as well as being enormously damaging to existing students at those departments. Given that our Higher Education system is largely taxpayer-funded, it is important that the system reflects the strategic needs of the nation, rather than being solely demand-led.

1.9 We would therefore explore ways in which universities can prevent such closures when demand drops, for example by ensuring that teaching funding from HEFCE provides the resources needed to run such departments without cross-subsidy from other budgets. We would also encourage

universities to fill their places in shortage subjects such as STEM and modern languages before they expand other subjects.

1.10 The current career structure in science is not letting talented young researchers make the most of their education, and this is a waste of resources. As the Royal Society recently noted, over half of doctoral students leave academia immediately after finishing their theses, often moving into jobs that do not require post-doctoral skills. There are simply not enough post-doctoral positions available to provide adequate job security for young researchers. We would explore with stakeholders across the sector how these concerns could be addressed, by measures such as expanding the number of postdoctoral places, as well as making PhDs more industry-friendly, funded by reducing the surplus of under-utilised PhD places.

Developing the UK's strength in Science and Engineering Research and Development

2.1 There is no use in pretending, as some do, that the UK is in a strong position when it comes to spending on science. Although the science budget has doubled in real terms since 1997, overall Government realterms spending on science has risen by only 40%, which is simply in line with GDP growth. As CaSE has noted, Government spent only 0.55% of our GDP on research and development in 2007, which was no higher than the comparable figure in 1997. This is unimpressive by the standards of our international competitors. We need to recognise the situation that we are in, and plan accordingly.

2.2 Liberal Democrats recognise that UK science needs long-term planning in order to be structurally viable and internationally competitive. We are therefore committed to not cutting science spending in the first year of the new Parliament. It would be wrong in the current economic climate to pledge that any single departmental budget will be protected, but as we say in our manifesto, our party recognises the importance of science investment to the recovery and to the reshaping of the economy, making it less reliant on the City of London and creating new green industries instead.

2.3 We are also committed to not allowing the science budget to be raided once it is fixed (respecting the so-called intra-departmental 'ring-fence') for the given Comprehensive Spending Review (CSR) period, to provide the stability that long-term research programmes and people in science require. We would also clearly define what the science budget can be used for at the beginning of a spending period, so that the ring-fence is not 'inversely' breached by introducing new cost pressures from other budget headings.

2.4 More generally, we support the Haldane Principle. We recognise that decisions on how the science budget should be spent are best made by those in the science community itself, and we would not attempt to micro-manage research planning.

2.5 Given that much research in UK is tax-payer funded, though, we do see a role for Government in directing funds at a macro-level in order to maximise the return for the taxpayer – for instance, in having the final say in allocations to different research councils. But unlike the current arrangements, this should be an open and transparent process so that they can be debated and amended.

2.6 Our approach is one of working hand-in-hand with the private and charity sectors to increase the amount of research and development being done in the UK. We currently rank second-bottom amongst G7 nations in the proportion of GDP spent on R&D, at just 1.81%. This is unacceptably low, especially since the Government's own target is 2.5%, and reflects the fact that our economy has developed into one built on the financial services – foundations which are demonstrably unsound, as the economic crash has shown us.

2.7 We want to move to a knowledge-based economy, and our reforms to science education will take us toward that aim. But we also intend to conduct a wide-ranging review of ways in which we can encourage more non-Government investment in R&D, and how such investment can be used most efficiently. This might include reforming R&D tax credits in order to get rid of 'dead weight' investment, looking at how seed funding be more focused, or assisting venture capitalists in identifying promising technologies. We see the creation of knowledge intensive jobs as integral to our aim of having a highly-skilled workforce.

2.8 We would also work to tackle the crisis in UK physics, and will publish details of this plan prior to the General Election.

Enabling Science and Engineering to create economic opportunities and responses to societal challenges

3.1 It is the responsibility of Government to make sure that public funds are spent efficiently, and that the dividends of research are used to their maximum potential. But the Liberal Democrats recognise that the best way to do this is to enable scientists get on with their work, based on peer review, rather than using clumsy mechanistic ways to try to direct research into areas of high economic impact. Many of today's most economically-important technologies were born out of purely curiosity driven research.

3.2 We believe that asking scientists to consider the potential impact of their work and how they would exploit it is a valuable exercise when planning their research, and would support making it a requirement for all grant applications that scientists show they have engaged in that exercise. But such considerations should not be used to decide whether projects are funded or not, even as tie-breakers; we recognise that the economic impact of science is inherently unpredictable, and making funding decisions on uncertain premises could ultimately be damaging. We are therefore opposed to the use of non-evidence based impact predictions when deciding resource allocations, whether that be in grant awards or through the Research Excellence Framework.

3.3 Instead, we think the stage at which exploitation should be pursued and encouraged is when research has had a chance to generate the early promise of economic impact. We would require the research funders to review the work that they fund once it is in progress, and ensure that researchers are helped to exploit innovation and application. We would review the role of the Technology Strategy Board and potential partnerships between Government and industry to identify such potential and to provide the framework for the gap between feasibility and exploitation to be bridged.

3.4 The shortage of women studying science and engineering is a major concern. Fewer than one in ten new engineers are women, and that represents a loss not only to the women involved, who have been put off such a career they might have excelled in, but also a huge loss to the engineering community and to the economy as well. Other fields in STEM have similar problems, and it is vital for the health of UK R&D as a whole that we work to rectify them.

3.5 Liberal Democrats would introduce exit interviews for everyone leaving publicly-funded research posts so that we would have clear data on reasons for departure. Disproportionately more women than men leave science at nearly every stage of their careers, so such data would be invaluable. We would work with funders and institutions to examine ways in which the impact of the 'publication gap' for women and men who take career breaks to raise a family can be minimised. We would begin discussions with the Equality and Human Rights Commission to ask them to judge whether they feel the Public Sector Equality Duty is being honoured in this sector.

3.6 Our excellent research base is also based upon the fundamental principles of scientific free speech and peer review. This system has come under threat from the over-broad English libel laws. We have heard evidence from scientists and journals that they are not able to publish data and conclusions for fear of defamation lawsuits, and are extremely concerned by the effect of the libel 'chill', whereby researchers may never even seek to publish. Scientific journals are obliged to pay for enormously expensive legal insurance to protect themselves, which damages the industry.

3.7 Liberal Democrats were the first party to wholehearted commit to radical libel reform, and we would bring in a Libel Reform Bill as a matter of urgency in order to protect peer reviewed research from libel suits. Science does not merely tolerate criticism; its progress utterly depends on it. We cannot hope to reap the economic benefits of research if our legal system allows powerful vested interests to punish those who engage in that criticism.

3.8 We believe that publicly-funded research should always be published, if it is able to pass peer review. If taxpayers have paid for it, they have a right to see it, and that is particularly true when it comes to medical research. We believe that all approved clinical trials should be registered, and that they should all be published. As well as potentially allowing breakthroughs that might not otherwise have been identified, we believe that such this would underline the culture of integrity that underpins this nation's success in science. We would also ensure that when public funds are used there is a level playing field between conventional ('reader pays') and open access ('author pays') publishing models.

Organising and utilising Science and Engineering within Government

4.1 Liberal Democrats believe that public policy should be evidence-based as far as possible. We recognise that this requires the goodwill and support of the science and engineering community. Advisers must feel able to give their advice without fear of being blamed or bullied if it not what a minister or tabloid newspaper editor wants to hear.

4.2 We were therefore appalled to see the unfair dismissal of the independent Chair of a Scientific Advisory Committee by the Home Secretary. While the Conservatives had urged the Government to dismiss him sooner, it was our party which defended scientists' inalienable right to academic freedom and free expression. We still recognise the need to heed the recommendations of the Philips Report

into the BSE crisis. It is unacceptable that scientific advisors should feel pressured into giving advice which fits with existing Government policy, and especially so in fields that deal with public health and criminal justice, where people's lives are at stake.

4.3 For that reason, we wholeheartedly endorsed the original Principles for the Treatment of Independent Scientific Advice, which was drawn up by the scientific community and underlined the independence and freedom of advisors to the Government. We are extremely concerned to see that the Principles have been watered down by the Government. They have introduced a nebulous duty on advisers to "maintain the trust" of ministers, which goes beyond the existing codes of practice. We would incorporate the original Principles into the Ministerial Code, so that such a situation cannot arise again.

4.4 Our focus on the Ministerial Code reflects a desire to make science a mainstream consideration within Government. To that end we would consider and consult on plans to move the Government Office for Science to the Cabinet Office, away from its current location in BIS.

4.5 We are also disappointed to see that the Treasury still lacks a departmental Chief Scientific Advisor (CSA). At this time of economic stringency, such a post would be more important than ever. We would institute a CSA at the Treasury as part of a drive to maintain the highest standards of evidence-based policy across Government.

4.6 This drive would extend to reinforcing the powers of the Government's Chief Scientific Advisor (GCSA). We would, for the first time, require the GCSA to report to Parliament any cases of poor handling of evidence or science advice that s/he encounters, or has been reported by departmental CSAs or Select Committees.

4.7 Parliamentary scrutiny of Government on all issues – including science – is core to our strategy, as a consequence of our party's democratic instinct. But such scrutiny needs to be well informed, and we would therefore consult with Parliament about reforming the role and scope of the Parliamentary Office of Science and Technology (POST). We would like to see a Parliament in which POST takes a proactive, informing role for MPs and peers, holding regular well-advertised topical briefings for parliamentarians, giving them background information on Early Day Motions and legislation, and offering training in evidence-based policy to those who want it.

4.8 It is our hope that this kind of scrutiny would usher in an era when the highest standards of evidence are seen as the baseline for judging policy-making. We would like to see, for instance, regular use of Randomised Controlled Trials (RCTs) in testing new social policy initiatives in those circumstances when the balance of evidence is not conclusive.