

# Briefing: Science and engineering in the 2016 Scottish election

Scotland has well-established strengths in science and engineering. With political support, science and engineering can continue to equip young people for a high tech future, overcome global challenges, create great jobs, and help build a prosperous Scotland.

Ahead of the election CaSE wrote to all party leaders asking them to set out their policies that relate to science and engineering. Their responses are published on our website. In this briefing we look at their responses alongside the parties' manifestos drawing out their commitments and statements that relate to science and engineering. Our policy analysis is divided into three categories:

1. Investment in science and engineering research
2. Education and skills for science and engineering
3. Use of science and engineering in government

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## The Scottish Conservatives

### On science and engineering education and skills

- will support the autonomy of the higher education sector, resisting any political interference (p25)
- believe the FE college cuts from the last Parliament should be reversed, with an additional £60m every year for the sector (p25)
- will introduce a retention linked postgraduate teaching bursary to support high achieving graduates who are interested in getting into teaching via the postgraduate route, especially in STEM subjects (p24)
- support the introduction of a TeachFirst scheme that would place some of the brightest graduates into most challenging schools (p24)
- Support re-entering Scotland into all the main international education comparison tests: PISA, PIRLS and TIMSS and the design of new standardised tests at P1, P4 and P7 to fit into these international methodologies (p25)
- want to see an additional 10,000 apprenticeship starts every year by the end of the Parliament and higher level apprenticeships in particular

### On the use of science and engineering in government

- The manifesto states policy decisions should always be made “with sound science at heart - something that was suspended in the government’s decision on GM crops”
- Will improve evaluative research on what works in education, for example, by offering government match-funding to third sector educational charities and re-establish an independent inspectorate outwith Education Scotland (p25)

The full manifesto can be accessed on the Scottish Conservatives’ [website](#).

## The wider view from CaSE

The Scottish Conservatives’ manifesto assumes an SNP majority in the upcoming election and states that their aim is to become the principal opposition party in Scotland to hold an SNP government to account. In her [letter](#), Ruth Davidson set out her support for science and engineering particularly in the context of the future jobs - wanting to make sure Scotland can attract businesses and has well qualified people to fill those roles.

A welcome focus in their letter is on support for science specialists in every primary school and better access to CPD for teachers, particularly in STEM. These commitments are welcome and reflect asks from the science community, including CaSE.

The manifesto, and letter, express support for better monitoring and measuring of education and skills outcomes, for instance through re-entering tests that allow comparison with international peers such as TIMSS. In her letter, Ruth Davidson also highlights concerns about a one year dip in the

uptake of STEM subjects in HE and recommends this should be monitored. This kind of monitoring and evaluation would help provide an evidence based platform for a party in opposition to scrutinise government policy and activity. They also support the introduction of new standardised national tests which is an area of disagreement between the parties.

Ruth Davidson's letter and their manifesto picks out the SNP Government's decision on GM crops as an example of not basing decisions on scientific evidence and states that her party would act differently. This is very welcome, but there is no detail on how they would support this activity being embedded across government as they have not set out any concrete proposals.

## The Scottish Greens

### On investment in science and engineering

- Will promote sustainable expansion in industries including clean chemical sciences, digital and creative industries, medical and life sciences, construction, engineering and the energy industry (p5)
- will support development and sustainable practices in sectors such as research and development (p5)
- will champion increased research and development for strategically critical sectors, such as liquid air energy storage and tidal stream, for domestic energy storage systems, and for alternative bio-based feedstocks at Grangemouth to reduce dependency on petrochemicals (p20)

### On science and engineering education and skills

- Will create over 200,000 jobs in sustainable industries, supporting Scotland's energy industries to begin a large-scale transition into renewable energy generation, design and research as outlined in a 2015 report, [Jobs in Scotland's new economy](#) (p4)
- Will support measures to increase access to new jobs for groups underrepresented in science, technology and engineering, including women and people from minority ethnic communities (p5)
- Will call for increased funding for Modern Apprenticeships and Science, Technology, Engineering and Mathematics to enable more young people, particularly young women, to move into renewable energy generation, supply and support (p20)
- Will support a broader curriculum which should reflect modern industries, such as computer programming, bioscience, the creative industries and technological innovation (p17)
- Will allow Scotland's universities to oppose the marketisation of Higher Education and to distance themselves from mechanisms such as the Research Excellence Framework, Teaching Excellence Framework and other artificially competitive funding mechanisms, enabling them to concentrate on real research and teaching (18)

- Will continue to place pressure on the UK government to reintroduce the post-study work visa (p18)
- Will call for transferable digital skills to be taught in schools and for businesses to better engage with the education sector on the issue (40)

#### **On the use of science and engineering in government**

- Will argue for Scotland's ban on genetically-modified crops to remain in force
- will work to ensure that the decision-making process for legislation on Scotland's new Marine Protected Areas and marine planning system is based on scientific evidence

The Scottish Greens have published their [manifesto](#).

#### **The wider view from CaSE**

The Party have stated they “believe that we need to generate 50% of all our energy use from renewables by 2030.” As outlined in their [letter](#) to CaSE, a commitment to improving sustainability in communities and industry and reducing emissions are driving factors behind many of their policies that would affect jobs, skill development, and investment in science and engineering.

In their education policies, diversity is also a repeated theme from the (non-STEM specific) statements in their manifesto supporting funding for training teachers so that they are able to tackle diversity issues in the classroom, and tackling poor diversity in apprenticeships – which the rightly highlight is particularly apparent in STEM fields. They also set out their support for increasing in teacher numbers, which is part of worsening teacher shortages in science and maths subjects, but do not set out any plans for how to achieve this. Interestingly they do make a clear link between the need to grow future STEM skills with immigration, calling for the reintroduction of the post-study work visa.

#### **Scottish Labour**

Yet to be published at time of writing

##### **On investment in science and engineering**

##### **On science and engineering education and skills**

##### **On the use of science and engineering in government**

#### **The wider view from CaSE**

At the time of writing, Scottish Labour's manifesto is yet to be published. However, in their [letter](#) to CaSE they set out a number of proposals relating to science and engineering and outline where supporting science fits alongside their priorities.

As with some other parties, the rationale for their support for science and engineering is focussed on the future of jobs and seeing the need to increase the number of science and engineering skilled people. In addition, throughout the letter there is a focus on expanding that opportunity to a more diverse range of people. In her [speech](#) at Science in Parliament in 2015, Kezia Dugdale said that “investment in the teaching of STEM, and whatever it takes to shift the gender imbalance in disciplines like engineering will be at the heart of my leadership, be that in opposition or government.”

The letter also sets out their support for increased investment in science and engineering, with a focus on investment in education at all levels. It states that they would increase investment in all areas of education in real terms funded by using new powers to increase tax for those already paying higher rates. Policies they outline include increased funding for STEM teachers, and the sustainable financing of STEM subjects at university.

Their letter sets out that they would appoint a Government Chief Scientific Advisor, a position that has been noticeably long-term vacant, who would answer to the First Minister and would have a minister responsible for science. But for further details on their policy direction, and how their commitments for science fit alongside other priorities, we await the publication of their manifesto.

## The Scottish Liberal Democrats

### On investment in science and engineering

- will champion science funding and support Scottish universities to continue to secure high levels of UK science funding (p7)
- will support diverse technologies for renewable energy, including research into hydrogen technology and energy storage at Scottish universities together with support for solar, micro-hydro, bio-energy and anaerobic digestion (p28)

### On science and engineering education and skills

- introduce a 1p increase in income tax to fund education (p5)
- oppose the introduction of standardised national tests (p6)
- will introduce a new initiative to commission Scottish universities to expand MOOCs for use by schools, including supporting and enriching science teaching (p6)
- support retaining the policy of no tuition fees for students (p7)
- will protect higher education institutions autonomy
- will support more women entering STEM, including by using Scotland International and the Global Scots network to create a special programme for young women interested in a career in science (p7)
- will keep pressure on the UK Government to allow overseas graduates to continue making a contribution in Scotland (p8)

- will support the current Scottish Government's plan for 30,000 new apprenticeships, including with as many as possible at higher levels (p8)

#### **On the use of science and engineering in government**

- will establish a Science & Technology Committee of the Scottish Parliament to raise the profile of science (p8)
- will respect the role of the Chief Scientific Adviser and recruit to fill a vacancy promptly (p8)
- will establish a scientific basis for GM crop policy, using the available evidence on safety, biodiversity and the effectiveness of individual GM technologies before taking decisions (p8)
- state that they believe drugs policy should be based on scientific evidence
- against fracking (p26)
- do not support a second independence referendum in the next parliamentary term (p34)

The full manifesto can be accessed on the Scottish Liberal Democrats' [website](#).

### **The wider view from CaSE**

Science is a prominent feature in the Scottish Liberal Democrats' manifesto, including a section within their chapter on education entitled 'strong universities and science'. In his [letter](#) to CaSE, Willie Rennie reaffirms the importance he places on supporting science in Scotland.

The headline of their manifesto is their penny for education policy set to raise half a billion through income tax that will support investment in education including at school and colleges. Their support for science and engineering takes a primarily supply-led approach, improving education and skills to have knock-on effects on industry in future.

Supporting research features as part of the Liberal Democrats' commitment to 100% of Scottish electricity to be from renewable sources, demonstrating their understanding of the need for continued research and innovation to meet energy and environmental challenges.

The Liberal Democrats pride themselves on their commitment to evidence in policy making so it is not terribly surprising to see a number of policies with that flavour. Their letter and manifesto goes beyond making general statements of support to making specific proactive commitments to embed the use of evidence in parliament and government to support evidence-based policy making and parliamentary scrutiny. This includes stating in his letter, that appointing a new Chief Scientific Adviser is a top priority.

### **The Scottish National Party**

#### **On investment in science and engineering**

- will fund three research PHDs in Motor Neurone Disease and a further three in Multiple Sclerosis (p3)

- will develop a range of specific actions as part of a sustained national programme to boost productivity through innovation, including actions to develop joint research and development initiatives between academic institutions and businesses (p12)
- will simplify the way in which companies are able to access support for innovation (p12)
- will continue to support our eight Innovation Centres, to assist the commercialisation of world-class research in big data, digital health, industrial biotechnology, sensor technology, construction, stratified medicine, aquaculture and oil and gas (p12)
- will seek opportunities to boost growth in sectors such as construction, engineering, aerospace and automotive industries (p16)
- will support research and action on biodiversity protection and habitat restoration (p31)

#### **On science and engineering education and skills**

- will Make Maths Count through measures to ensure that more children succeed at maths, particularly in achieving qualifications, and are encouraged to seek related further and higher education, training and job opportunities (p9)
- will continue to invest in the National Libraries Strategy, including initiatives like coding clubs (p9)
- will introduce standardised assessment in schools from 2017 (p9)
- will encourage greater external involvement in key aspects of learning, such as enterprise and STEM (p10)
- a digital learning and teaching strategy will give all children appropriate time and activity to develop digital skills (p10)
- will develop and implement a new compact for universities that captures our shared vision for education and the economy, and sets out shared priorities for action
- regarding job creation they will bring forward a new Labour Market Strategy in first 100 days (p14)
- By 2020, will deliver 30,000 apprenticeships each year and target the additional places on higher level courses, including graduate-level apprenticeships, including work to address diversity issues (p14)
- will develop a STEM strategy to make children aware of the opportunities science, technology, engineering and maths can offer (p15)
- will expand school STEM clusters and develop a Scottish STEM ambassador network and will focus on encouraging more girls and women to study STEM related subjects (p15)

#### **On the use of science and engineering in government**

- Would hold an independence referendum if the UK voted to leave the EU, and yet Scotland didn't and will work hard to persuade a majority of the Scottish people that being an independent country is the best option for our country (p24)
- will continue the opt-out of the cultivation of genetically modified crops for the lifetime of the next Parliament to protect the food and drink sector's international reputation (p26)

- Do not support fracking and have also put in place a research process and plans for a public consultation so that any decision is based on both evidence and public opinion stating that unless it can be proven beyond any doubt that there is no risk to health, communities or the environment, there will be no fracking or UCG extraction in Scotland (p31)

The full SNP manifesto is published on their [website](#).

### The wider view from CaSE

The letter from the SNP, along with their manifesto, takes time to outline their record in government regarding science and engineering. In their manifesto, this includes listing the new scientific and engineering infrastructure and capital investment although much of this is from UK wide funding. In their [letter](#) to CaSE, they also set out how they have invested in science education through the Scottish Schools Education Research Centre and set out plans in their Developing our Young Workforce [Strategy](#) from 2014 which includes a focus on STEM. In their letter there is a commitment to continue to invest significantly in educational opportunities relating to STEM as well as a strong emphasis on equality and diversity throughout their education and skills offer.

Their manifesto names three new potentially relevant strategies the SNP would develop - for STEM, energy, and digital learning and teaching - as well as developing a compact with universities, and developing a range of specific actions to boost productivity through innovation. These are all areas of interest and could prove beneficial, but as the commitment is to develop ideas rather than setting out their proposals it is difficult to draw out how these would impact on science and engineering in Scotland.

The SNP have a clear awareness of the role of the Scottish Government in supporting science and engineering beyond education, particularly apparent in their discussion of innovation initiatives, R&D investment and inward investment in their letter to CaSE.

Their letter, written by SNP science minister Alasdair Allan in his capacity as an SNP candidate, speaks of the SNP's support of science as indicated by the provision of a Science Minister. Over the last Parliament CaSE and others have raised concerns with the Government about the position of scientific advice in Government decisions, especially with the post of Chief Scientific Advisor being vacant for over a year. There is no mention of appointing a CSA in the manifesto, their letter does point to the other positions within government, including the Chief Medical Officer and the Chief Scientist (Health), asserting that the government has drawn on the best science advice. The letter also notes that by the time a new government is elected a new CSA should have been appointed. We look forward to the announcement with interest.

## UKIP

The UKIP manifesto is published on their [website](#).

### **On science and engineering education and skills**

- want to see a proper balance of educational institutions with high quality universities alongside high quality further education colleges, apprenticeships, technical schools, grammar schools and vocational training (p12)
- will review the curriculum to ensure it is producing the future workforce Scotland needs (p12)

### **On the use of science and engineering in government**

- Support UK leaving the EU (p2)
- support research into GM foods, including research into the benefits and risks to the public and would allow a free vote in parliament on commercial cultivation
- will abolish unnecessary EU regulation and directives relating to environmental protection and biodiversity stating they will take relevant scientific and research led advice as their guide in this and all other farming matters (p13)

## The wider view from CaSE

The UKIP manifesto doesn't specifically outline any policies specifically designed to support science and engineering in education or in industry. However, throughout its manifesto UKIP is consistent in referring to taking a science-led approach in decision making from their proposals on biodiversity, to GM and salmon farming which is very welcome.