

Briefing: Science and engineering in the 2016 Welsh election

Science and engineering are crucial to Wales' future. It makes sense to build on the nation's capability in science and engineering to deliver a competitive edge in the global economy. 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. Here we look at 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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Welsh Conservatives

On investment in science and engineering

- Establish a clear and ambitious manufacturing strategy appropriate to Wales' small and medium sized enterprise economy (p5)
- Work with the UK Government in building a new innovation centre, helping to secure Wales' position as a world leader in science (p6)
- Support innovation in healthcare by providing £50 million in match funding for research into new treatments and cures (p15)
- Increased funding for dementia, stroke and heart disease research as part of a plan to deliver improved outcomes in these diseases in Wales (p18)

On science and engineering education and skills

- Establish an HE institution focused solely on initial teacher training and educational research (p23)
- Consult on ways to encourage the study of foreign languages in Key Stage 4, especially in conjunction with STEM and business subjects (p24)

On the use of science and engineering in government

- Embrace international research to narrow the attainment gap between children from different social backgrounds (p23)
- Introduce a comprehensive, scientifically-led programme of bovine TB eradication to deal with the disease in cattle and wildlife (p31)
- Commit to publishing cabinet decision reports online (p52)
- Give the National Assembly a greater scrutiny role in policing the ministerial code (p52)

The full manifesto is available on the Welsh Conservatives' [website](#).

The wider view from CaSE

Their manifesto commitments are light on directly discussing science and engineering and both their manifesto and letter have a focus on industry regarding investment, skills and advice.

In their [letter](#) to CaSE they highlight that Wales, unlike Scotland and England, doesn't have an enterprise zone that specifically supports science or engineering and that this could be valuable for attracting businesses. However, they stop short of saying they would introduce one.

The manifesto doesn't focus on STEM at school but there is an interesting statement about improving educational research and initial teacher training – both areas of interest and concern for the science community.

In HE, there aren't any science and engineering specific commitments, however their statement about exploring 2 year compressed degrees as a way of reducing student debt could raise some challenges for the sector. In their letter when asked about supporting high cost subjects such as science and engineering their response focuses on creating university technical colleges to deliver these 'heavily practical courses'.

The manifesto includes some good recommendations regarding the use of research and scientific evidence in policy making, including an interesting focus on educational research as well as committing to a 'scientifically-led' approach to bovine TB eradication. In their letter to CaSE they do commit to maintaining the role of Chief Scientific Adviser. However when asked about how they would ensure scientific advice is embedded in the policy making process has a real focus on listening to the voice of industry with little said about the role of research in informing policy more broadly.

Welsh Greens

On investment in science and engineering

- Build partnerships between our universities and businesses to develop innovation, especially for smaller businesses, with tax breaks and subsidies for research and development activities (p8)
- Support research and development in Wales into waste revaluing and circular economies, and support universities to work with businesses and initiative to develop new opportunities and employment, using subsidies and tax breaks to incentivise development in this sector (p13)

On science and engineering education and skills

- Promote digital literacy across all of the population (p15)
- Create one post-16 independent funding body for both colleges and universities at arm's length from the Government to oversee the strategic vision, development and funding of these institutions (p17)
- Introduce fee and maintenance loans for postgraduate students (p17)
- Protect the disabled students allowance (p17)
- Increase funding for part time study at university (p17)

On the use of science and engineering in government

- Reject the Westminster government's attempts to gag the third sector charities or trade unions and prevent them from critically evaluating government policy (p7)

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

The wider view from CaSE

The Green Party's [letter](#) to CaSE begins by putting science and engineering in the context of creating good ideas and driving change, particularly in relation to the development of new technologies. Their manifesto shows an awareness of the role of universities and the research base in driving innovation and growth and their letter states that they would push for large investments in technology, research and development, but is less clear on where this funding is to come from and how it would be delivered.

Their letter reveals a distrust of industry, including industry funding of research which could be a concern and not reflective of the true picture of industry-university collaboration. They are, however, supportive of university academics having a greater voice into Government and have picked up on the recent debate around the anti-lobbying clause, rejecting its use in Wales.

Their education policy pulls out maths as key to unlocking development in science and engineering and support more focus on maths education. More generally their belief in free education at all levels would result in changes to higher education in particular, funded by modest tax increases.

Welsh Labour

On investment in science and engineering

- will introduce a New Treatment Fund, to enable new drugs and high cost treatments for cancer and other life threatening illnesses to be available in Wales first (p13)

On science and engineering education and skills

- create at least 100,000 all-age apprenticeships to ensure alignment between the skills people gain and the skills the economy needs (p17)
- will deliver coding skills in schools to open up new opportunities in the digital economy (p17)
- A new funding body for Higher and Further Education in Wales (p17)
- will address digital exclusion by setting a target of helping 95 per cent of people gain at least the basic digital skills needed for the 21st century (p19)

On the use of science and engineering in government

- Support UK remaining a member of the EU (p7)
- robust and unequivocal opposition to fracking (p7)
- Support a science-led approach to evaluate and review the best way of tackling Bovine TB (p9)

The wider view from CaSE

The Welsh Labour manifesto doesn't specifically mention science, engineering or STEM, although in his [letter](#) to CaSE, Carwyn Jones articulates his support for STEM education in the context of developing high quality STEM skills across Wales. In particular he highlights their recently launched STEM education plan, [STEM in education and training: a delivery plan for Wales](#), stating that the ambition for the plan is to bring about a major shift in the perception of STEM subjects. This includes a commitment to improve analysis, reporting and monitoring of progress, developing STEM-related qualifications, supporting teachers to be able to deliver a new and challenging STEM curriculum, increasing participation and diversity in these subjects as well as improving awareness of the opportunities STEM bring for future careers.

The letter to CaSE also adds the detail that the intention is that many of the 100,000 apprenticeships will support the major infrastructure projects currently in the pipeline. Their manifesto states that they will build on success in key sectors including modern manufacturing, aerospace and the automotive sector. However, they do not set out how they would do this.

Carwyn Jones also sets out his party's support for the continuation of the Government Chief Scientific Advisor. It is interesting though that despite the support set out in their letter, none of the measures outlined feature in their manifesto, and similarly manifesto commitments that would impact upon science and engineering – such as a new funding body for Higher and Further Education in Wales - are not picked up on in the letter.

Welsh Liberal Democrats

On investment in science and engineering

- Expand investment in Knowledge-Transfer Partnerships to transfer academic knowledge smoothly to real-life businesses' projects as part of a wider innovation strategy
- Create a database of Research & Development at Welsh universities to encourage collaboration between Higher Education and the private sector as part of a wider innovation strategy
- Minimising the use of animals in scientific experimentation - we remain committed to the three Rs of humane animal research: Replace, Reduce, Refine (p75)
- extending the Health Technologies Fund to support the take up of new medicines and establish a new Office of Life Sciences (p32)

On science and engineering education and skills

- Provide additional finance for universities to support more expensive subjects such as engineering and computer science and tackle gender imbalances in student recruitment
- Encourage businesses to publish data on the diversity of their board memberships
- Support targeted, local, face-to-face training schemes for businesses and individuals to tackle digital exclusion

- establish an Educational Standards Authority to set the curriculum content in Wales following broad direction set by Ministers for a “curriculum for life” including coding (p23)
- protect funding for Higher Education in Wales, and increase funding for HEFCW (p27)
- work with developers and educational institutions to expand supply chains and centres of excellence for the next generation of engineers and apprentices in renewables (p50)
- Require all recipients of public money to demonstrate they understand the gender issues in their organisation/sector, have an action plan in place to address these issues and are monitored on progress (p60)
- Introduce a presumption that every public appointment shortlist should include non-male and BAME candidates, and establish an independent committee to monitor the drive for greater diversity in public appointments and verify the independence of the appointment process (p60)
- Establish a cross-party commission to examine adult education and skills in Wales (p26)
- Double the number of apprenticeship starts (p11)
- maximise the economic benefits of renewables by working with developers and educational institutions to expand supply chains and centres of excellence for the next generation of engineers and apprentices (p50)

On the use of science and engineering in government

- Support the UK remaining in the EU (p95)
- Speak of commissioning research to find policy solutions (p44)

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

The wider view from CaSE

The Liberal Democrats pride themselves on their commitment to evidence in policy making so it is not terribly surprising to see a focus on improving data gathering and use in Welsh policy making, with a number of commitments in their [letter](#) to CaSE of how they would do this. They, like others, also commit to retaining the Welsh Chief Scientific Advisor.

Considering wider investment in research and innovation, they also commit to developing a 25 year sustainable growth strategy, as well as an innovation strategy with a number of measures that are likely to be welcomed by universities and research intensive, innovative companies.

Their school level policies do not discuss science, focusing on numeracy and literacy and in freeing up teachers to teach, giving them more freedom over what they teach. Their letter to CaSE noticeably does not mention school level education at all, instead focusing on higher education, despite it being a major area of devolved responsibility. They commit to protecting HE funding and shifting support from student fees to student support for living costs. The savings from doing so would be used to increase HEFCW funding including for QR, widening access and employability and increasing PhD funding.

Plaid Cymru

On investment in science and engineering

- will establish a National Innovation Body, working in partnership with the private sector, to achieve our target of doubling Welsh R&D expenditure spend as a % of GVA to the OECD average of 2.3% (p65)
- The NIB will fund a national network of sector-led Research and Technology Centres, on the Fraunhofer or Catapult model (p65)
- will create a Higher Education Innovation Fund to support R&D and spinout activity within our University sector
- seek the devolution of Research Councils and Innovate UK monies to Wales to the NIB and a new Welsh Research Council
- As part of an industrial strategy they will create clusters of more specialized high-tech and innovative companies, extending the UK's southern 'arc of innovation' and 'northern powerhouse' westwards (p61)
- Create a national strategy based on Wales as a green tech country to position Wales as a global leader in offshore and onshore wind, marine renewables and micro-generation
- Create a Wales Development Agency (p61)
- will set up a £50million New Medicines and Treatments Fund for Wales, by ringfencing the Pharmaceutical Price Regulation Scheme for this purpose (p103)

On science and engineering education and skills

- will allocate funding to HEFCW to close the growing funding gap between Welsh and other UK universities conditional on universities' commitment to reflect Welsh needs in their research, innovation and skill development (p57)
- will reform student finance so that Welsh domiciled students who work in Wales after graduation will receive £6,000 per year during the first five years after graduating, up to a maximum of £18,000 (p57)
- will support post-graduate study through a new postgraduate fund for income-contingent loans to Welsh domiciled students (p57)
- will use Wales' share of the apprenticeship levy money to create an additional 50,000 apprenticeships in Wales (p59)
- will create a new network of specialist, employer and/or university-led National Colleges of Vocational Education, for 14+ and post-compulsory education, beginning by inviting proposals for a National Construction College, a National Green Skills College and a National Digital College (p59)
- will create a single national centre for Initial Teacher Training that will develop a national network of pedagogical research centres, with laboratory schools in every region and a national Education Innovation Lab to promote the adoption of promising new approaches where the evidential basis is strong (p117)

- will restructure teacher training and continuing professional development with the aim of making teaching a Masters level profession and introduce a teacher salary premium (p119)
- will support women and girls to follow careers in key growth areas, especially in STEM (Science, Technology, Engineering and Maths) fields and will introduce gender balanced management boards in Welsh Government funded organisations (p157)
- will seek the devolution of migration policy, including setting own migration quota according to Welsh needs (p163)

On the use of science and engineering in government

- Would stop funding programmes which when reviewed in government are found to have a weak or a patchy evidence base
- conduct a Randomised Control Trial on the effects of subsidy on the consumption of fruit and vegetables (p101)
- will also fund research into additional therapeutic models of mental health treatment (p105)
- patients will have access to a Digital Health Service - a citizen-led system for holding health information where citizens decide which health information they upload and share with researchers and health bodies (p107)
- will make the NHS the most research friendly health service in Europe including setting targets for enrolling patients in clinical trials and embedding the use of research across the NHS, to develop the best evidence where uncertainty exists (p109)
- Oppose fracking (p133)
- Are against the growth of Genetically Modified Organisms in Wales (p141)
- Will use the most effective measures to control and eradicate bovine TB (p139)
- Are in favour of Britain staying in Europe (p183)

Plaid Cymru manifesto can be read in full [here](#).

The wider view from CaSE

In their manifesto and [letter](#) to CaSE they state an ambition to build a global reputation as a centre for research and innovation and their manifesto does contain a large number of science and engineering specific commitments across education and investment with a focus on drawing on international best practice throughout.

Some of their very welcome commitments include a target to double Welsh R&D expenditure as a % of GVA, and a focus on innovation infrastructure and investment as well as creating an industrial strategy focusing on high-tech innovative companies. They also want to see the devolution of Research Councils and Innovate UK monies to Wales and their proposed National Innovation Body. They also state that they would use additional funding from their proposed student finance reforms to invest in HE, including a Higher Education Innovation Fund similar to the Hefce fund in England.

Their focus on research continues into their commitments for the NHS. In manifestos across parties and devolved nations there is a focus on the NHS due to the enormous public interest it holds. However, Plaid Cymru clearly include a commitment to make the Welsh NHS the most research friendly health service in Europe, which could be a real attractor for related industries.

Regarding education their manifesto describes science outcomes in recent years as “disastrous” and a “national disgrace”. Their commitments focus on teacher quality, setting out commitments to increase recruitment and retention including a teacher premium and moving towards teaching being a Masters level profession to improve student outcomes.

UKIP

On investment in science and engineering

- Will protect the future further education budget in real terms (p20)
- retain the quality-related research (QR) budget that underpins world leading research in Wales (p20)

On science and engineering education and skills

- Will restore education data comparison between England and Wales so that it becomes once again possible to ascertain fair comparison on standards and funding (p17)
- will abolish the Education Workforce Council (p17)
- will ensure that all primary schools in any given local authority have regular access to maths and science specialists, from universities and other schools, who can visit, take at least some classes and provide support (p17)
- improve incentives for graduates of STEM subjects to enter teaching as part of aim to ensure pupils at primary and secondary level are taught by a subject specialist (p18)
- give teachers of STEM subjects more autonomy over the topics that they teach to improve job satisfaction and help to retain science and maths specialists (p18)
- require every primary school to nominate (and train, if necessary) a science leader to inspire and equip the next generation (p18)
- introduce University Technical Colleges to Wales on the Baker Dearing model (p19)
- will abolish fees for Welsh domiciled undergraduates taking degrees in Science, Technology, Engineering, Mathematics and Medicine (STEM) subjects in Wales, i.e. extend tuition fee grant to cover the current tuition fee loan element of costs for eligible courses (p20)
- replace tuition fee grant with loans for Welsh domiciled students choosing to study in England (p20)
- establish a bursary fund to help students from poorer backgrounds attend the most prestigious universities beyond Wales, whether in England or internationally, with a particular emphasis on STEM subjects and modern foreign languages (p20)
- regarding part-time provision, introduce loan restriction exemptions for Equivalent or Lower Qualification (ELQ) students in priority subject areas (p21)

- support disabled students to counter any adverse effects from the proposed changes to Disabled Students' Allowance (p21)

On the use of science and engineering in government

- will axe the £73 million Welsh government budget for climate change projects questioning whether such spending will have any material impact on the climate

The wider view from CaSE

We are yet to receive a response to our letter. From their manifesto, UKIP does show a strong interest in promoting science and engineering through its education policies. They state that they want “Welsh pupils to be truly given the chance to become the inventors, engineers, scientists and technicians of the future” and set out a number of specific policy recommendations.

Although their education policies suggest that UKIP gets the importance of science and engineering, in areas away from education, their policies provide few words of encouragement for the science and engineering community. CaSE would have liked to have seen more talk of investment and commitments to use science advice more prominently in government and policy making.