



The Women's Engineering Society
c/o The IET,
Michael Faraday House,
Six Hills Way
Stevenage,
Hertfordshire SG1 2AY

2nd September 2013

Dear Madam,

The Science and Technology Committee inquiry into women in academic STEM careers 2013

Please find enclosed the submission from the Women's Engineering Society to the Science and Technology Committee's inquiry into women in academic STEM careers.

The principal contacts in connection with this response are: Milada Williams, President or Jan Peters, Immediate Past President, who can be contacted via Email:
president@wes.org.uk

This submission does not contain any confidential information. WES would be happy to present oral evidence.

Yours sincerely,

Milada Williams
President

Summary of main points made in our submission

The key issues which we believe continue to inhibit a more equal career progression for women in STEM in academic life, and which contribute to the 'leaky pipeline' are:

- The "Two-body" problem.
- Child bearing and child/elder caring.
- Long-hours expectation.
- Lack of a clear career path.
- Lack of visibility and role models at all levels in the university.
- Hostile work environments.

The key issues which we believe have contributed to the failure to alter this situation to any significant extent over the past 30 years are:

- Multiplicity of short-term, localised, non-embedded efforts instead of a national permanently funded programme.
- An acceptance that a long hours' culture (which is a problem not of course restricted to universities) is the accepted 'norm' and any other way of working is a 'weakness'.
- A fossilisation of the senior levels in the university career structure and an overly fluid situation at the early career levels, leading to an unclear career path, particularly at key transition points.
- Expensive childcare which does not match working parents' needs.
- Pockets of misogyny within senior male 'gatekeepers' in academic structures.

All of the recommendations apply equally to women in industry, not least because we believe the nation would benefit if it was easy to move backwards and forwards between academia and industry during a career. These measures should be coordinated by a body at the heart of the STEM academic/policy or funding community.

Introducing the Women's Engineering Society

The Women's Engineering Society is a volunteer-led, small charity in existence for over 90 years. Our members represent all sectors, are qualified in subjects from maths, chemistry and biosciences through to PhD rocket scientists and all manner of engineering disciplines. They have entered technical professions through a variety of routes: engineering or science degrees, apprenticeships and even arts/humanities backgrounds.

The Women's Engineering Society was founded in 1919 and has a history of working closely with government on issues relating to women and work with particular relevance to science, technology and engineering. The Society draws its members from a broad range of sectors including defence, manufacturing, sciences, banking and finance and all stages of education, and policy making. Members also reflect all career and life stages.

Our submission includes exemplar cases drawn from personal perspectives and information gathered from enquiries to our offices, recent surveys of members and a call for responses.



Factual information of which we would like the committee to be aware

The issue of women engineers and scientists goes back to WW1 as seen in historical record of the Women’s Engineering Society (WES). Since the early years there have been almost annual enquiries into aspects of this issue for many years and ‘wake-up calls’ followed by short term projects every decade since the 1970s and even before. The progress has been modest, at best, and short term at worst. There is too much fragmentation of effort and re-invention of wheels. There is a need for action rather than examining, over and over again, why the situation exists. In the meantime, expensively-educated women are ‘lost’ to STEM careers in droves, for reasons not of their choosing.

Table 1 lists some of the many projects undertaken to help progress women in their chosen careers as a timeline. Note that this list represents just the last 30 years and there were numerous schemes and projects from about 1970 onwards, and even many efforts both during and between the two world wars.

“There have been many laudable schemes that have attempted to stem this loss of talent, but which, because of their often ad hoc, partial and short-term nature, have failed to have a sustained impact.” [Tapping all our Talents: Women in science, technology, engineering and mathematics: a strategy for Scotland. RSE. 2012]

Table 1 Timeline of the various initiatives and statistics over the past 30 years

Year	Initiatives and reports	Statistics
1983	Girls IT project established in Croydon.	
1984	<ul style="list-style-type: none"> • WISE Year - WISE launched with 6 buses, scholarships, publicity campaign and exhibitions (1984-now), 2005 WISE Outlook for high-achieving girls, 2012 merged with UKRC . • Women Into Computing set up (1984-2005). • GEMSAT project established in Notts (1984-5). • Girls And Technical Engineering (GATE) programme for 5th year girls launched. 	7% of engineering graduates are women

1985	<ul style="list-style-type: none"> • Women's training roadshows on non-traditional areas of work, by LEAs, FE & HE (1985-7). Women's Architecture Group (1985-99). • Women in Physics (WiP) group set up within Institute of Physics. • WITS access course set up at Huddersfield Poly. • Daphne Jackson Trust with fellowships for returners to SET, established (1985-now). • Women into Science and Technology (WIST) returners' course. • GLC conference and film Women in Construction. 	EITB estimates 2,700 women chartered and technician engineers, to increase to 17,000 by 2010.
1986	British Gas use GIST project findings to design girl-friendly publicity materials.	
1987	<ul style="list-style-type: none"> • Cornwall women in engineering science and technology (CWEST) set up. • Women in Property (WiP) set up. 	50% of English LEAs doing some action on gender equalities.
1989	Women in Astronomy group set up within the Royal Astronomical Society.	
1990	Hansard Society report: "Women at the top".	
1991	<ul style="list-style-type: none"> • Women As Role Models (WARM) in construction, launched. • Women Members Network set up within the Royal Society of Chemistry. 	1 female professor of physics in the UK
1992	Women in Construction Alliance (WICA) set up.	
1993	OST report: Realising our potential	
1994	<ul style="list-style-type: none"> • Rising Tide report published. • Girls Entering Tomorrow's science engineering and technology (GETSET) launched, reaching about 2,000 girls per year (1994-2000). • Association for Women in Science and Engineering set up (1994-2011), only Cambridge AWISE still running). • Dept of Industry's Promoting SET for Women Unit set up (1994-2004). • Commission on University career opportunities report promoting diversity in HE. 	
1995	WISSET, Girls GETSET & Winning women projects set up by HEFCS in Scotland.	
1998	LET's TWIST, JIVE + Wider Horizons launched, with awareness workshops for girls.	

1999	<ul style="list-style-type: none"> • Athena Project set up by DTI/OST, now the Athena SWAN scheme. • IMAGE, by E-skills UK to change girls' perception of ICT, leads to IT Beat project (1999-2005). • Women in Architecture set up. • WiSETI set up to support women at Cambridge. • RESNet set up at UEA. • 4 mentoring projects launched. • OU establishes Associate Lecturers in science group (ALIS). • European Commission DG Research sets up Women in Science section. 	Athena aims to increase women in university posts to 10% in 5 years.
2000	<ul style="list-style-type: none"> • Digital Eve established (not in UK now). • 5+ Local academic women's networks (LAWNS) running on short term grants from Athena. 	OST launch statistics website
2001	<ul style="list-style-type: none"> • BCSWomen set up within the British Computer Society. • Equality Challenge Unity set up by Cabinet Office. 	
2002	<ul style="list-style-type: none"> • SET Fair report published. • SET for Success report published recommending support for women in SET and also that all HEIs should establish career paths for junior staff and PhDs. • Computer Clubs For Girls (CC4G) set up online by E-skills UK and used by up to 2200 schools. • National Association of Women in Construction established. • Daphnet email list established by Imperial College and WES (2002- now). • MentorSET established by WES (2002-12). • Women in Plumbing set up by Institute of Plumbing and heating Engineering. • Local Academic Women's Networks (LAWNs) funded throughout UK by Athena project (2002-3). 	
2003	<ul style="list-style-type: none"> • JIVE Know Your Place scheme launched. • EOC does research into gendered career choices. 	9.6% of all PI applicants for EPSRC grants were female. 10.3% of total SET workforce was female.
2004	<ul style="list-style-type: none"> • B-Constructive CITB campaign for women, produced educational materials. 	13,400 women engineering undergrads, 13.9% of total. 7,300 women engineering

	<ul style="list-style-type: none"> •UK resource centre for women in SET (UKRC) established with local hubs in Wales and Scotland and English regions, running courses (OU T160 returners course) and other activities (2003-12 when it merged with WISE). 	postgrads, 18.9% of total.
2005	Scottish Resource centre for women in SET established, offering networking, mentoring and returners programmes 2005-now.	21,500 girls took physics GCSE, 40.7% of total entrants. 6,200 girls took A-level Physics, 22% of total entrants. 9,660 engineering NVQs to women, 11.2% of total. 7% of all STEM professors were female.
2006	<ul style="list-style-type: none"> •CITB + Construction Youth Trust launch Positive Images (women and BME) publicity campaign. •Discover! STEM Saturday Clubs for girls in Wales (2006-2010+). •Prometea: EU-wide collaborative study of retention & progression of women working in engineering research: http://www.prometea.info/. 	18% of engineering graduates are women.
2007	Supply of and demand for science graduates in Scotland report for Scottish Executive notes that women earn less in all fields and at all grades.	388 women complete engineering apprenticeships, 3.8% of total, but approx one third leave without successful completion.
2008	Women in science and engineering research project report commissioned by CSA & RSE for Scottish Government.	8,700 NVQs awarded to women, 9.1% of total. 15,400 women engineering undergrads, 14.9% of total. 7,400 women engineering postgrads, 20.8% of total. 9.3% of all STEM professors were female. 11% of all PI applicants for EPSRC grants were female. 12.3% of total SE workforce was female. 6.9% of engineering professionals were women. 35% of women with STEM degree work in STEM occupations.
2009	RAEng report "Inspiring women" http://www.raeng.org.uk/news/publications/list/reports/Inspiring_Women_Engineers.pdf First WES student conference	40,300 girls took physics GCSE, 44% of total entrants. 6,500 girls took A-level Physics, 22.2% of total entrants. 36 female

		professors of physics out of 650 total.
2010	The UKRC Statistics Guide on Women in Science Engineering Technology and the Built Environment (SET) published: http://www.theukrc.org/files/useruploads/files/final_sept_15th_15.42_ukrc_statistics_guide_2010.pdf	
2011	United Nations' Commission on the Status of Women (CSW) considered 'Access and participation of women and girls to education, training, science and technology, including for the promotion of women's equal access to full employment and decent work' as its priority theme during its fifty-fifth session in 2011	
2012	<ul style="list-style-type: none"> • UKRC closes and some functions merged with WISE. • Royal Society of Edinburgh report published "Tapping all our talents" http://www.royalsoced.org.uk/cms/files/advice-papers/inquiry/women_in_stem/tapping_talents.pdf • Scottish Government response: http://www.royalsoced.org.uk/cms/files/advice-papers/inquiry/women_in_stem/Scottish_Government_Response_2013.pdf 	73% of women graduates are lost from STEM, compared with 48% of male graduates. 59% of male and 39% of female engineering graduates enter related jobs.
2013	<ul style="list-style-type: none"> • WES produces the Voices project to share wisdom from students and early career women to students in years 8-13 making vital career decisions. 	



Recommendations that we would like the committee to consider including in its report

- An end to short-term 'projects'. There is clear evidence that these have not worked significantly. Whereas the sustained efforts to encourage girls to study STEM subjects at school and university have made a difference over the past 40 years, the intermittent nature of the initiatives relating to women who have gained STEM degrees and their subsequent career progression have made negligible progress.
- A national commission to investigate the real costs to parents of childcare and the costs to the nation of how the current costs and shortage of suitable hours of childcare inhibit women's ability to take up work options and develop careers at all levels. The commission should undertake an objective cost-benefit analysis of free universal childcare.
- The UK government should re-examine its hostility to the EU working time directive and encourage a culture that designs fair workloads within the contracted hours for all publicly funded workers. This would have the benefits of improving health (less stress) and releasing jobs that are currently 'hidden'.
- A fund to enable all universities to free up the fossilised upper strata of the academic job ladder by enabling them to appoint new staff on the condition that women are either appointed or promoted in that department.
- A clear career path should be devised for all universities which enables a route up the ladder without having to move from city to city or having to take fixed term contracts. With properly funded technical return programmes.
- Joined up effort from the Professional Engineering Institutions (PEIs) and for each one to embed diversity and inclusion within their whole programme; for them to undertake research into careers and cultures and to move beyond women's committees.

All of the recommendations apply equally to women in industry, not least because we believe the nation would benefit if it was easy to move backwards and forwards between academia and industry during a career. These measures should be coordinated by a body at the heart of the STEM academic/policy or funding community.

Submission from the Women’s Engineering Society

(2950 words)

<ul style="list-style-type: none"> • Why do numbers of women in STEM academic careers decline further up the career ladder? 	
<p>The “Leaky Pipeline”.</p> <p>It has been understood for decades that, even when the proportion of students of STEM subjects who are women is similar to or higher than that of men, by the time academic careers are reaching the possibility of a first tenured lectureship, the percentage of women has already started to decline and by the time of the professorship stage, women are typically about 15% of the total, at best. Female undergraduates and even postgraduate students commonly deny this will happen to them and are stunned and aghast when it does.</p>	1
<p>Statistics on this “Leaky pipeline” pattern are frequently presented in one of two forms: “The impossible pursuit graph”, in which the two lines (male and female %) never cross due to the lower % of women entering first degrees in that subject; and “The scissor diagram”, in which the lines cross, usually in the PhD/Postdoc stage, due to significant drop-out at some point after the first degree.</p>	2
<p><i>“It is no secret that many women join WES after a few years in the workplace, whether in industry, education or academia, when they feel they can no longer ignore the evidence piling up that all is not quite right, that the playing field is not quite level.”</i></p>	3
<p>The “Two-body” problem.</p> <p>Relationships can ‘fix’ one partner in a place where the other partner cannot find appropriate work. In a heterosexual relationship it is commonplace for the man to be a few years older than the woman and hence likely to be in a more advanced and secure employment, which makes any decision to uproot, in order for the woman to take appropriate work, even harder. How many new PhD women move out of STEM due to this? As there is a continuing, possibly even worse, culture of fixed term employment contracts in both the teaching-only and research areas of Higher education, the legislation seems to work against early career STEM workers gaining ‘tenure’.</p>	4
<p><i>“For me the real difficulty was moving from fixed term post-doc positions to a permanent contract. The fixed term employee regulations 2002 made it difficult to keep employment in the same geographical area (causing difficulty of maintaining two careers),”</i></p>	5
<p>Child bearing and child/elder caring.</p>	6

<p>Are Principal Investigators in charge of appointing early career researchers still recruiting men to avoid maternity leave costs or 'inconveniences' during their projects? Women still report being asked (illegal) questions about their 'family plans' at interview. Could all UK Research Council funding streams guarantee additional funding on demand for parental leave cover for both male and female staff?</p>	
<p>However, it seems widely unknown that actually parental leave <u>saves</u> the university money, even though the university tops up the income above SMP. If this saving can be tracked, the head of department should be able to say to their faculty "XX is off on leave, saving the university £YY. The dept would like to use this to hire a post-doc to cover XX's lectures, and/or an administrative staff member to administrate XX's exams and marking etc."</p>	7
<p><i>"I hope that things have changed, but I'm not convinced that some STEM departments are yet gender neutral in recruitment, or in the attitude of some older staff to female academics who strive for promotion. Most of this bias is unconscious, but it can make for an uncomfortable working environment."</i></p>	8
<p><i>"Covering family responsibilities for absences at scientific conferences and meetings can be tricky, and this constrains networking opportunities. There is some funding available to cover costs, but the cover still has to be found. It can be difficult to balance the time required to establish and maintain an academic career with the needs of a family (this is a cultural issue)."</i></p>	9
<p><i>"I have been completely screwed by an institution where no female Engineering Academic has ever had a (paid) sabbatical, grants & PhD students are taken away by others/terminated due to maternity leave 'absence'."</i></p>	10
<p>There is a lack of affordable child care which fits the demands of a full time academic career. It is often not clearly understood by new parents that preschool child care is much easier to arrange, assuming it is available and affordable at all in their area, than childcare for primary schoolchildren. Childcare in the UK is considered to be amongst the most expensive in the world. An added expense is that it is paid for out of post-tax income, also it is anticipated that all parents employing childcare in their own homes (nannies) will soon have to pay for the nannies' pensions too.</p>	11
<p>Before-and-after school or all-day holiday childcare or 'clubs' for 5-14 year olds are not available everywhere, even in the big cities. This can further constrain women's options as academics. Childcare difficulties for school age children can lead to parents using all their annual leave allowance to cover childcare between them and both parents getting no holiday break at all. How many women academics fail to thrive in their posts due to these difficulties?</p>	12
<p><i>"I worked in an engineering department which was a thoroughly unpleasant workplace, where bullying was rife, with a sexist head who called me "girl" and told me "don't worry your head about it, girl" and with colleagues who made it clear that I should be at home with my kid and they weren't interested in collaborating with me "because I was a mother and therefore couldn't travel"."</i></p>	13

<p><i>“One of the biggest factors for many women in deciding whether to remain in or return to a STEM career is the provision of good quality, affordable childcare. In many places, suitable childcare is not available near the place of work and does not match the hours that the parents work. Where such facilities exist, the places are often over-subscribed and prohibitively expensive.” [Tapping all our Talents - Women in science, technology, engineering and mathematics: a strategy for Scotland. 2012]</i></p>	14
<p>Childcare for single parents in order to attend the international conferences which are essential to career progression, can be impossible if there is no nearby family to take over. There is no such thing as residential childcare in this country, the nearest thing being perhaps the residential ‘summer camps’ run by the commercial sector in some parts of the country for older children.</p>	15
<p>Long-hours expectation.</p> <p>The standard 37-hour week academic contract is almost universally translated by university management into a reality of 60-hour working weeks for many if not most academic staff. This is highly anti-family but is required in order to prepare for the teaching load and also achieve the grant applications and research outputs required by all university hierarchies. How many women find that the aggregate of duties - child care, elder care, housework, lecture preparation, research work - all pile up until something has to yield?</p>	16
<p><i>“Head of Department came into my office privately and told me I was a fool to get pregnant and that I would as a consequence never get a permanent post now. His view was that nobody would appoint me with a small baby as I would not be able to put in enough hours to compete with the rest.”</i></p>	17
<p><i>“I was told by the head of department that I could not put my three periods of maternity leave onto my promotion application and CV – he would not support it if I did. It was his opinion that the panel would not support my application if they thought I had small children as I couldn't put the required hours in. In the end I was turned down for internal promotion because there were 'gaps' in my publication record (which corresponded to my periods of leave ...). At this point I got a Senior Lectureship elsewhere and left!”</i></p>	18
<p>The pressure to achieve specified outcomes, especially in connection with the government’s assessment schemes (RAE08, REF14 etc), can lead to women in particular being accused of failure to produce the outcomes, whilst still overloading them with far more teaching, administrative and pastoral obligations than their apparently more successful male colleagues. This demonstrably leads to health issues, if nothing else, and still does not achieve the best research for the university.</p>	19
<p>In addition, this is both exploitative of the staff member and deprives someone else of the opportunity to work in academia, since the overworked academic is doing the equivalent of nearly two jobs for the price of one. Thus, thousands of jobs which should be filled by other people, are ‘hidden’ behind the facade of the long hours culture, due to one person doing 60 hours on a 37 hour contract.</p>	20
<p>Lack of career path.</p>	21

Many early career men and women find themselves trapped in multiple fixed term contracts, with a lack of job security. There is no direct route from fixed term research assistant posts to tenure-track posts. More women than men are to be found in low status and short term contracts. There are still many hidden rules, and male-dominated committees.	
<i>“Mentoring has been incredibly useful for me in my career - I would have given up and got a teaching job except for my mentor.”</i>	22
Academe is shrinking numerically due to cuts, and the numbers of academics retiring is reducing due to the changes in pension ages, so there is not much movement further up the academic ladder and so no promotion within the same institution may be likely or possible. Family ties may restrict ability to choose to apply for promotion jobs elsewhere. Unless ring-fenced funding is made available to create senior posts associated with career progression for women, the current (small) cohort of early and mid career women have no prospect of promotion.	23
Lack of visibility and role models at all levels in the university. Some departments have never had female academics. Most universities have no buildings or even rooms named after significant women. Most universities have few or no portraits of women on the walls.	24
<i>“It is discouraging to [me as a postgrad] see so few women in permanent positions and managerial positions. This applies not just to engineering but to the University as a whole, for example the management team have only 25% women and the University Court is similar % female.”</i>	25
<i>“It is key that young academics (PhDs, post-docs, Early Career Researchers) are able to see that it is possible to be a successful female in their field. I have been lucky to have some amazingly supportive senior female colleagues, and consider it part of my duties to mentor younger academics of both genders, but particularly to support female scientists and engineers. If the university wanted to be seen to take this seriously, there should be credit given in promotion cases for time spent on mentoring at all levels from primary school, to one-on-one mentoring with someone going on mat leave, for instance.”</i>	26
The HE sector should be offered a special “Two Cultures into One” grant scheme to enable institutions to commission artists to produce portraits of female STEM achievers for display throughout their buildings.	27
<ul style="list-style-type: none"> • When women leave academia, what careers do they transition into? What are the consequences of scientifically trained women applying their skills in different employment sectors? 	
This question might usefully be expanded to include women who move sideways within academia, either into the managerial/administrative grades, or into other disciplines, such as education or humanities. Arguably, their STEM skills continue to be of use but they are no longer working so directly with their original degree topics.	28

<p><i>"I am moving to a humanities department as I am more interested in the social, economic, political and legal barriers to the uptake of engineering/science. Engineering [in my previous department] was just about the numbers/technology, it didn't consider if that information was of use to anyone."</i></p>	29
<p>Interestingly, only a vanishingly tiny proportion of elected politicians at any level have a STEM background and most of those are from medical careers. Hardly any decision-makers have any personal insight into either the culture or the expertise in STEM. This is frequently reflected in the low proportion of STEM people (of any gender) featuring in the Honours Lists, or in Top100 (men/women/most powerful/richest etc) lists in the media. A recent list in The Guardian of the top 100 most powerful LGBT people did not feature a single person with a STEM career. STEM is less visible to the media than the many excellent science programmes on the TV might suggest.</p>	30
<ul style="list-style-type: none"> • What should universities and the higher education sector do to retain women graduates and PhD students in academic careers? Are there examples of good practice? 	
<p>Universities should have to provide paid research sabbatical on return from maternity (or paternity/ adoption/ long-term sick) leave, so that staff do 6 months of only research (no teaching), to get themselves back on track. This should NOT be to the detriment of other staff so it needs to be funded.</p>	31
<p><i>"I arranged a 6 months funding for xxxx to take a break from teaching on return from her maternity leave in April 2013. I wrote her salary into a bid from EPSRC and the faculty agreed to transfer the full sum back to the department to cover her."</i></p>	32
<p>There should be a presumption of agreement to, or even an encouragement of flexible working, both in time and location but not to encourage a long hours' culture whether at home or in the office. Senior women in STEM in industry report being able to take "Annualised hours" or compressed weeks/months.</p>	33
<p>Clear work load models which make it possible to achieve the targets, without excessive unpaid overtime. There should be an obligation to publish the workload models and audit them to ensure compliance.</p>	34
<p>Compulsory training for <u>all</u> people who wish to be Principal Investigators or on appointment or promotion panels, involving interviews with people who had some real life issues. The research councils could lead the way by requiring evidence of such training for anyone who wants to be a PI applicant to any of their schemes.</p>	35
<p>Encourage those on maternity leave to come into the department for regular meetings with PhD students and RAs etc in their group, and add that time to the total maternity leave period or deduct from full time hours on return.</p>	36
<p>Resources saved due to parental/sickness leave should be automatically redirected to the cost centre in which they are needed for to pay for cover for teaching etc. The savings to the department for someone earning about £30k gross per year would be at least £11k.</p>	37

<p>Visibility: those universities which have publicly displayed portraits of, for instance, past chair-holders and principals, will normally have an almost exclusively male display. This should be counteracted by commissioning portraits for public areas of women of achievement from amongst staff and alumnae and perhaps also from the wider STEM field. Name buildings and rooms after similar women.</p>	38
<ul style="list-style-type: none"> • What role should the Government have in encouraging the retention of women in academic STEM careers? 	
<p>Schemes to encourage girls and women into STEM degrees and careers have been going on for a long time now and have not shifted the statistics much (see table 1); in the last 20 years the proportion of working engineers who are women has gone up from 6% to 8% - not a good return on all the effort. Something else is needed and WES believes it lies in workplace culture or “climate”. Measures that are long-term, <u>not adhoc</u>, should include support for:</p>	39
<ul style="list-style-type: none"> • Free universal child care and/or automatic (not means tested) tax-deductibility for child care costs. More 24/7 child care, for those without family support networks, so that principal carers can work the required hours and go to conferences etc. This remains the only one of the demands put by the 1970 National Women’s Liberation Conference (http://www.bbc.co.uk/radio4/womanshour/03/2010_08_thu.shtml) which has not been met by subsequent legislation (equal opportunities, equal pay, access to contraception and abortion have all been legislated upon in the past 40 years). 	40
<ul style="list-style-type: none"> • Permanent government-funded support for peer-mentoring at all career levels to avoid drop-outs from chosen pathways; for employers to follow good practice in recruitment and development of staff. Mainstreaming such funding without enforcement of required action will lead to initiatives being dropped when the cuts bite into core grants. 	41
<ul style="list-style-type: none"> • More opportunities to connect women across each career transition point. Far more and permanent funding for returners projects, such as <i>Daphne Jackson fellowships</i>, Athena SWAN etc 	42
<ul style="list-style-type: none"> • Require HEIs to have a certain proportion of female academics in each of their STEM departments or firm plan in place to achieve it, in order to be eligible for government funding. 	43
<ul style="list-style-type: none"> • Commission studies to examine research councils’ grant proposal outcomes by gender and other protected categories (to see if there is a history of discrimination) and publish the results. Do some controlled studies during REF14 to see if Unit of Assessment panels assess differently if they know who the outputs’ authors are. 	44
<ul style="list-style-type: none"> • Make it a requirement on employers to advertise all publicly -funded jobs as available for flexible working. 	45
<ul style="list-style-type: none"> • Improve the provision of information, advice and guidance to both young people 	46

and adults to remove the gender biases which continue to exist and make positive steps to reduce stereotyping in careers advice.	
<ul style="list-style-type: none"> • Look at the recent soundings article from the New Economics Foundation about the benefits of reducing the “normal” full time working week to 30 hours - http://www.neweconomics.org/blog/entry/its-time-to-change-the-way-we-work-and-care 	47
<ul style="list-style-type: none"> • To stimulate greater engagement from the PEIs so they participate in research in relevant disciplines and make recommendations around the retention of women in academia and to facilitate programmes and funding to enable women to update their skills after a caring break. 	48
All of the considerations above apply equally to women in industry, not least because we believe the nation would benefit if it was easy to move backwards and forwards between academia and industry during a career. These measures should be coordinated by a body at the heart of the STEM academic/policy or funding community.	49