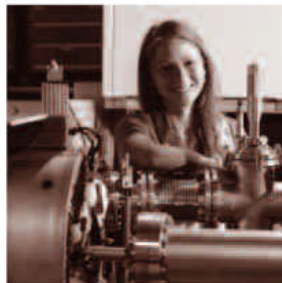
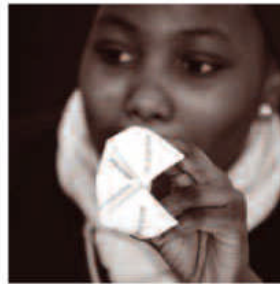


The business of equality

Science, engineering and technology - stronger through change



UKRC promises to

- Support business and organisations to increase the recruitment, retention and progression of women scientists, engineers and technologists
- Advise and support women to get into, get established, get back and get on in SET career paths
- Engage in policy debate, the provision of research and data, and strategic influence within the SET community in support of its mission.

About the UK Resource Centre for Women in Science, Engineering and Technology (UKRC)



The UK Resource Centre for Women in Science, Engineering and Technology (UKRC) works to improve the participation and position of women in science, engineering and technology (SET) occupations in industry, research, academia and public service, to benefit the future productivity of the UK and the lifetime earnings and career aspirations of women. It is the UK's leading centre providing information and advisory services to employers and organisations in the SET sectors and supporting women entering, returning and progressing in these fields. The UKRC acts in partnership with the many businesses, organisations and agencies that have influence in the sectors, to create an integrated and comprehensive approach. It is guided by industry and supports the work of Women in SET organisations.

Making progress

It has got better. But the UK can do more.

- Girls now outperform boys at grade A in 7 out of 9 STEM 'A' - level subjects, though they remain in a minority taking most of the subjects.
- The proportional increase of STEM undergraduates has been larger for women over the past six years - there are now 33 per cent women on STEM undergraduate courses.
- However drop off from SET employment is still higher for women graduates.
- Of the 600,000 SET qualified women in the UK, 97,000 are inactive and 70 per cent are employed elsewhere in the economy.
- Women are still just 9 per cent of directors of the SET FTSE 100 companies.

UKRC's strategy to fully engage business and organisations in the drive to attract, retain and promote women in the sector is beginning to pay off.

- Atkins Global, EoN, BT, Sony and Pepsico are among over 100 business and organisations that have signed up to our CEO Charter.
- Over the past 18 months, UKRC has directly influenced 670,000 (9 per cent) of the SET workforce through work with businesses and organisations: they report increases in the numbers of women at all levels from apprentices to board level; adoption of flexible working by women and men, and external recognition and profile for good employment practice.
- The UKRC's social return on investment analysis estimates that 94per cent of the value generated through UKRC's work in businesses and organisations brings cost benefits to them, with the remainder benefiting the community.

UKRC's extensive support programmes for women make a difference.

- We currently reach and influence approximately 11 per cent of SET qualified women and priority groups remain women who are unemployed or inactive SET graduates.
- Women taking up UKRC services report real change in their SET job prospects, with more than 60 per cent securing work or a promotion.
- Many women experience multiple benefits thanks to the UKRC, directly increasing their contribution to the economy through taxation and increased purchasing power and reduction in the use of public funds.

UKRC's work is providing multiple social and economic returns to the UK and proving an excellent return on investment.



Annette Williams
Director

UK Resource Centre for Women in Science, Engineering and Technology

Getting more women scientists, engineers and technologists

Why this matters to the economy

The loss to the UK economy by qualified women scientists, technologists and engineers working below their level of qualification, unemployed or inactive is estimated to be £2bn. The UK must continue to invest in women scientists, engineers and technologists, to overcome barriers, build on achievements and accelerate results.

- Women are central to the workplace, our economic future and our society's well being. There is increasing evidence that women on boards and in teams improve profitability and performance and that flexible working arrangements result in benefits to the employer as well as to the individual.
- The key growth sectors of low carbon technology, biotechnology, advanced manufacturing and electronics will rely on a good supply of scientists, engineers and technologists. These sectors need women in their workforce.
- In engineering, for example, the predominantly male workforce is aging. Many are over 50 and due to retire in the next ten years. There are fewer school leavers coming into the workforce. Countries and businesses that are gender inclusive will be better placed to respond to demographic and social trends.
- The UK needs to build a SET education to employment pipeline that attracts, develops and keeps women. Women need a seamless route-way to get in, establish their careers, return after a break and get to the top, whether they follow an apprenticeship or an academic route. Everyone involved in the career pipeline - education, business, and professional organisations - must build an 'integrated strategy' – systematic and coordinated.
- The UK economy will be damaged without government intervention. The UKRC and other Women in SET organisations have contributed to the progress. Getting more women scientists, engineers and technologists is a public policy challenge - synonymous with boosting economic growth and equality in the workplace. It demands public and private sector solutions because the problem is multifaceted.

We are asking all political parties to commit to:

1. Leadership and top level support for change

- a ministerial level SET and gender champion to achieve integration across government
- leverage change by setting targets in all mainstream programmes to achieve 30per cent and 10per cent participation respectively in the professional and the vocational SET workforces by 2020
- promoting the business benefits and enlisting the support of business commitment to champion and achieve change
- stepping up action on the 50per cent women target for new recruits for public SET bodies, and encouraging a voluntary 30per cent minimum of women on private SET boards by 2020. SET public bodies to have 40per cent women by 2020.

2. Attracting and retaining women and girls to study STEM subjects

- tackling gender stereotyping from the early years throughout the career pipeline
- gender inclusive STEM enrichment and mandatory 50 per cent take up by girls
- gender targets for those STEM 'A'- levels or degree subjects where girls are under represented
- a national atypical work experience programme
- better careers advice for girls and inclusive and resourced careers services for adults as returners and career changers
- address skills shortages through funding for special programmes to increase the numbers of women working in SET and better pathways. Removal of funding disincentives to apprenticeship programmes and better marketing of apprenticeships at adult women.

3. Making the most of the talents of UK's trained and qualified people – building the workforce

- gender proofing design and delivery, and setting mandatory outcomes in all workforce and labour market programmes, supported by gender targets, equality training and expert advice
- incentivising businesses to take up expert gender equality advice and training and instigating an industry benchmark for gender reporting
- incentivising improvement for women in research careers through the research excellence framework and maximising work life balance
- funding central co-ordination and sector-specific services through the UKRC, to raise standards, support equality action and drive innovation.

4. SET learning and employment free from gender stereotyping

- a funded integrated framework and strategy on gender stereotyping and occupational segregation to achieve gender inclusive education, skills and employment outcomes
- a cyclical and national cross media campaign on gender stereotyping together with action on negative advertising which reinforces gender stereotypes
- funding support services for individual women and supporting women in SET organisations, including the UKRC
- a lead minister to champion integrated action on gender stereotyping including occupational desegregation to drive gender inclusive practice and change.

5. Measures to make equality in SET happen

- equalities legislation implemented to address the root causes of women's inequality in SET
- a public sector procurement policy that drives equality outcomes through supply chains to benefit business and the economy
- action to increase the diversity of women scientists, engineers and technologists
- leadership and commitment to integrated joint action to improve participation, working with the UKRC.

6. Support and fund the UKRC in its work, and strengthen its role as an agency charged with:

- strategic leadership on the position and participation of women scientists, engineers and technologists
- providing specialist services and supporting mainstream provision, to benefit women, business and the economy
- innovating new ways to improve women's participation and providing a pathway to a more equal, productive and successful society.

1. Leadership and top level support for change

The UKRC welcomes the progress on women's equality and the initiatives targeted at SET sectors to date. UKRC asks for further leadership for the public and private sectors, to enable and require businesses and other organisations, including professional bodies, to adopt a proactive approach to gender balance in the SET workforce. This will depend on strategic and integrated funding for services and initiatives.

Many government policy strands and programmes can make a difference to occupational desegregation. Achievable and aspirational targets applied throughout the policies on science, the workforce, education and unemployment/economic inactivity increase gender equality. Targets encourage the mainstreaming of commitment and implementation, and create positive outcomes for women and the UK economy.

SET business leaders are already showing enthusiasm for change. The UKRC's CEO Charter has over a hundred signatories. CEOs commit to articulating - publicly and proactively - the industry demand for women scientists, technologists and engineers. They commit to taking action on gender equality. These trail blazers join those accredited through recognition schemes - Athena Swan Charter and the SET Fair Standard. Men still hold the majority of leadership positions in the sectors and so are central to action to promote equality. The new government should build on industry's recognition of the economic imperative and so tap the business benefits of women's contribution to SET industries, enterprise and innovation.

Women remain under-represented as leaders and decision makers, in SET, in government policymaking, on public bodies and on private boards. In 2009, women still made up about a quarter of the membership of SET- related public bodies. In 2008, only 27.5 per cent of SET FTSE 100 companies had more than one woman director on their boards.

UKRC asks the next government to:

- Appoint a 'Gender and SET' government champion at ministerial level to drive a cross governmental and integrated strategy to tackle gender segregation in education, workforce and science policy.
- Leverage improvements across government, in the professions and in the private sector by implementing and monitoring targets for women and men's participation in SET across all relevant government programmes affecting science, the workforce, and those seeking employment and education with a goal of achieving 30 per cent participation in the professional and associate professional SET workforce, and 10 per cent in the vocational workforce, by 2020.
- Promote the economic imperative and business benefits of women's contribution to SET and enlist the business community in identifying more champions for change, willing to transform business practices to enable women's full participation in SET.
- Increase the participation of women on SET public bodies through stepping up action for the target of achieving 50 per cent women for all new public appointments (and the related targets of 11 per cent from BME communities and 14 per cent people with disabilities). By 2020, women should make up 40 per cent of SET public appointments.
- Promote a voluntary commitment by private SET companies to move towards equality at board level, achieving 30 per cent women members by 2020.

Change is needed.

While women are now 46 per cent of the UK's economically active population, they are only around 12 per cent of the professional, associate professional and vocationally skilled SET workforce.

2. Attracting and retaining women and girls to study in STEM

Through education, the UK builds the future workforce. It needs the widest range of skills and engagement at every stage. An education 'pipeline' operates from the early years right through into adulthood. Women are participating in STEM in ever greater numbers but there are still deeply segregated patterns, which can be tackled well before Key Stage 3 or 4.

Gender inclusive teaching, gender targets, monitoring and reporting on 'STEM enrichment', programmes can help solve under representation. After school engineering clubs in Sweden and the UK with mandatory 50 per cent participation by girls have been successful. (see also the section on gender stereotyping.)

The proportion of girls taking SET subjects at GCSE and 'A'- level has improved, but they are still less likely than boys to take maths, computing and physical sciences at 'A'- level. This limits their career paths into many areas of SET and scientific research. The UK has improved take up of STEM subjects but action should be more focused by gender for young people from all backgrounds.

Well implemented work experience opportunities have been shown to help and inspire women and girls to enter occupational areas where previously they have been in a minority. Current provision is fragmented and often reinforces stereotypes. There are good models that need implementing nationally to create impact.

Good quality careers services can help to increase take up of STEM subjects and SET career paths. Adult returners need accessible, relevant advice, regardless of their prior level of qualification. The careers workforce could benefit from training and resources to address gender stereotyping and to support women of all ages interested in SET careers at all levels. Expertise of professional bodies should also be directed to support this.

Women are almost completely absent from some STEM vocational subjects in further education, like construction. They are segregated into traditionally 'female' occupations, which are often less well paid. Apprenticeship programmes still include funding disincentives. These prevent full access for adults, and especially women in sectors with high occupational segregation and skills shortages. Better and targeted marketing of apprenticeships to adult women increases take up.

A second chance to move into SET occupations can improve representation through measures including: services focused on unemployed women and returners; funds for late entrants for re-skilling regardless of existing qualifications or benefit status; access/Year '0' courses; support for progression into technical and vocational employment and on into professional level employment.

UKRC asks the next government to:

- Tackle the whole education pipeline, sustaining girls' and boys' enthusiasm and interest in STEM, competence and subject take up, starting with the early years at primary level.
- Improve STEM enrichment by providing gender training, and monitor girls and boys' participation in STEM enrichment, with a 50 per cent requirement for the involvement of girls.
- Set gender targets at 'A'- level and degree level in the STEM areas where women and girls are currently under-represented, such as physics, mathematics, IT and engineering related subjects.
- Establish national atypical work experience programmes that enable girls/young women and SET- qualified adult women returning to work to gain appropriate and valuable work experience in male-dominated fields of science, engineering and technology.
- Improve access to adult careers advice for women returners regardless of their prior level of qualification or benefit status, and train and resource the careers workforce to address stereotyping and meet the needs of women of all ages interested in SET careers at all levels, drawing in the expertise of professional bodies.
- Address skills shortages by funding integrated, national programmes aimed at increasing the numbers of women qualifying and working as scientists, engineers and technologists at all levels, focusing on those areas where women are in a minority. Encourage pathways into and between vocational, technical and professional work, and ensure apprenticeships are well marketed to adult women.

The attrition of girls from STEM starts at GCSE and continues into employment despite girls outperforming boys at grade A in 7 out of 9 STEM 'A'-levels, though they are still mostly in a minority taking the subjects.

In higher education women make up 33 per cent of those studying SET but this masks their low representation on degree courses in engineering (15 per cent) and computer science (19 per cent).

In engineering and manufacturing technologies, in vocational skills training, only 2.8 per cent are women, and there is a mere one per cent in construction.

3. Building a talented workforce: making the most of the UK's trained and qualified people

The UK's economic growth and better use of women's potential and skills in the workplace go hand in hand. The demand for skills is intensifying. Women in the UK are concentrated in lower paid sectors. This wastes investment in vocational, technical and professional skills. Government funded workforce and active labour market programmes would achieve more with gender targets, gender equality expert advice, and gender training for delivery agents. Monitoring for gender throughout would motivate improvements.

Positive improvements in SET organisations and workplaces, creating viable career paths, are gaining pace. They include: flexible working, fair, transparent and anonymous recruitment processes; parental leave; quality part time or job share roles and inclusive workplace cultures. The best are responding with systematic action on gender equality. Government can incentivise better practices by employers and their supply chains. Recognition schemes like the UKRC's SET Fair Standard award progress and achievements. An industry benchmark for reporting on women and men's participation and other key indicators like flexible working would further lever change.

Under representation also characterises careers in research. Many barriers affect women and men, but the negative factors are often more decisive for women. After a break, women commonly lose their place on the career ladder. Women do not reach senior levels in the same proportions as men with the same qualifications. The Concordat and the Athena Swan Charter are extremely valuable levers. They could form part of a broader strategy linked to the funding mechanisms that drive behaviour in higher education and research. An inclusive and diverse research environment should be linked to the measurement of institutional research excellence.

The UKRC is helping to provide solutions for the SET business and organisations wanting change. Many now understand the imperative but fewer know how to achieve change. The UK still needs central expertise and innovation in gender equality in SET, as well as the integration of gender objectives within mainstream government programmes.

Specialist services assist individual women too. Time out for parenthood and caring exerts a penalty on women and men. Many more women lose the return on the investment in their education, their career prospects are constrained, they end up working below their qualification and experience level. Others can't easily enter SET for the first time. Women are under represented as SET entrepreneurs. Over half a million women with SET qualifications could gain from targeted action on this agenda.

Attrition from SET limits the UK economy and our ability to face global and local challenges. Women are producers and consumers of science, technology, engineering and innovation. Gender and women's participation are relevant to fundamental science, applied science and innovation. Diverse research teams are more effective. A gender-informed analysis can drive innovative technologies and services, especially in the green economy, new industries and 21st Century social challenges like ageing, energy and food production.

UKRC calls on the next government to:

- Gender proof mainstream workforce and active labour market programmes (including apprenticeships, adult careers initiatives, sector skills agreements), and ensure access for returners regardless of their prior qualification level, in order to increase the numbers of women entering or re-entering SET occupations and sectors.
- Offer financial and other incentives to SET businesses (especially SMEs) to take up expert gender equality advice and services as solutions for reducing skill shortages. The role of government to champion improved workplace policies, cultures and practices to enhance recruitment and reduce attrition at all stages in the career cycle is critical to UK productivity.
- Instigate an industry benchmark for reporting on the implementation of gender monitoring and other key indicators such as quality part time posts and flexible working.
- Ensure the system for assessment of research excellence includes measurement of action on equality, diversity and inclusivity of the research environment. Ensure that flexibility in research grants and funding is fully used to enable early career researchers to balance work and family life, take up maternity and parental leave and gain quality career development.
- Fund central co-ordination and sector-specific services through the UKRC, to raise standards, support equality action and drive innovation (for example, by offering advice and support to businesses, organisations and women scientists, engineers and technologists).

Of the 600,000 women qualified in SET in the UK, 70 per cent do not work in SET.

Women are less than 16 per cent of the professional SET workforce.

5.5 million people work in skilled or professional SET areas, but only 12 per cent are women.

Only 25 per cent of women SET graduates work in SET occupations and £2bn is lost from the UK economy as a result.

4. Tackling gender stereotyping

Gender stereotyping is deeply engrained in our culture and thinking and isn't limited to early childhood, it continues throughout life. It impacts on subject and career choice, on occupation and on career progression. Stereotypes persist into the workplace and contribute to the gender pay gap. Gender stereotyping influences careers advice, work experience, vocational segregation, workplace practices and employment outcomes. It therefore requires an integrated response.

Views about gender and work and the family roles of women and men can arouse debate. But we should question the basis and the prudence of ideas and bias (often unconscious) that limit the roles and capabilities of women and men. We need government to take a lead in dismantling stereotypes in occupations and in society.

Gender stereotyping plays a key role in forming individual women's sense of identity, whether they break the mould or follow more traditional paths. Limited gender based expectations (from others, and internalised) can be countered through targeted services for individual women. The work of the supporters of women scientists, engineers and technologists - voluntary and professional organisations, networks and industrial groupings – remains essential.

More than 30 years of research and interventions on gender stereotyping have built a substantial evidence base and expertise. The UKRC's work advising, consulting and acting as a 'gender mentor' to the SET sector has supported change and needs to continue. Leadership and commitment of resources from across government and across parties could encourage debate and action. We need a better settlement between women and men in these key sectors of the economy.

UKRC calls on the next government to:

- Develop a funded integrated framework and strategy on gender stereotyping with a key focus on occupational segregation, targeted at professionals in teaching and learning, STEM enrichment, careers services, employment and skills intermediaries, funding agencies and regulatory bodies such as Ofsted, to develop understanding and action on gender inequality in SET, including a key role for the Department for Children, Schools and Families
- Establish a high profile national media campaign with an annual cycle targeted at parents, children, business and adults to widen occupational aspirations, explicitly break down stereotyping, profile role models and highlight the relevance, variety and excitement of science, engineering and technology. Also tackle gender stereotyping in advertising by promoting good practice and developing regulation.
- Ensure learning and career support systems (such as mentoring and coaching) are available to girls and women at all stages of STEM education and employment and recognise and fund the networks and organisations that support women scientists, technologists and engineers, individually and strategically, including the UKRC.
- Establish a lead minister to champion and coordinate the cross government framework on occupational desegregation and gender stereotyping, to drive the implementation of gender inclusive practices and change in education, skills and employment.

5. Further measures to make equality in SET happen

Equalities legislation designed to enable fair employment practice, work life balance and equal pay frames and complements changes in industry and support to women. It makes a difference to women technologists, engineers and scientists because they depend on equality measures like equal pay, flexible working and good recruitment and selection. Good, well-implemented legislation benefits women, business, research and education. The next government's employment strategy should focus on senior part time quality roles and encourage flexible working opportunities: all jobs should be externally advertised and open to flexible working at the first point of entry, rather than this being an earned right.

The Government and the public sector spend millions of pounds on contracts. In recent times, we have seen efforts to leverage equality outcomes from procurement, and this work should be actively pursued and strengthened. Government itself is a key purchaser of services, able to set an example in this area.

Policy and interventions also need to consider the differences between women from diverse backgrounds and socio-economic groups. For example, women from some black and minority ethnic (BME) communities gain SET degrees in higher proportions than white women. However, BME women SET graduates are also more likely to become economically inactive.

The causes and effects of the under representation of women scientists, engineers and technologists, and the consequent loss of skills and potential are complex. They demand an integrated and systematic approach with many agencies working together, sharing the responsibility to make change happen.

UKRC calls on the next government to:

- Enact and implement strong equalities legislation including the public sector duties, which responds to women's diversity, enables choice and ensures that women's roles within the family are compatible with careers and earning a living, and encourages a broad based culture change, which increases men's roles as carers.
- Sustain and develop a public sector procurement policy, which drives equality outcomes that benefit both business and women scientists, technologists and engineers.
- Adopt an explicit and proactive approach to increase inclusion and widen diversity of women scientists, engineers and technologists, and increase women's social mobility through SET career pathways.
- Lead and incentivise an integrated approach to improving the proportions of women working as scientists, engineers and technologists at all levels, working with the UKRC to achieve this.

The UKRC vision

By 2030 we will have an environment in UK employment, research and policy-making in science, engineering, technology and the built environment, in which women contribute to, participate in and share the benefit equally to their male counterparts. This long-term vision can only be achieved if all stakeholders within science, engineering and technology take the necessary action to make it happen.

The UKRC partnership

The UKRC is led by a partnership including the University of Cambridge, the University of Oxford, the Open University, Sheffield Hallam University, Queen Mary University of London, with Bradford College as the lead partner drawing on its 10 year track record in initiatives for women and widening participation.

UKRC Services are provided from a central base in Bradford, West Yorkshire, from national centres in Scotland and Wales and from a local centre in the South East of England, where the concentration of scientists, engineers and relevant employers is particularly high.

The UKRC is Government's lead organisation for women in SET, launched in September 2004. The UKRC is core funded by the Department for Business, Innovation and Skills (BIS). It supports the strategies for science and innovation.

UKRC's final message

Our final message to the next government and so we can deliver our promise:

Support and fund the UKRC in its work and strengthen its role as an agency charged with:

- Strategic leadership on the position and participation of women scientists, engineers and technologists
- Providing specialist services and supporting mainstream provision, to benefit women, business and the economy
- Innovating new ways to improve women's participation and providing a pathway to a more equal, productive and successful society.

Figures and statistics are based on secondary analysis of official sources by the UKRC, and evaluations of our services and activities. Further sources, data and research can be found on our website and in our publications.

If you would like this document in a different format, please contact the Marketing Team on 01274 436485 or email info@ukrc4setwomen.org



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