

# Addressing Gender Balance - Reaping the Gender Dividend in Science, Technology, Engineering and Mathematics (STEM)



STEM Business Group November 2013

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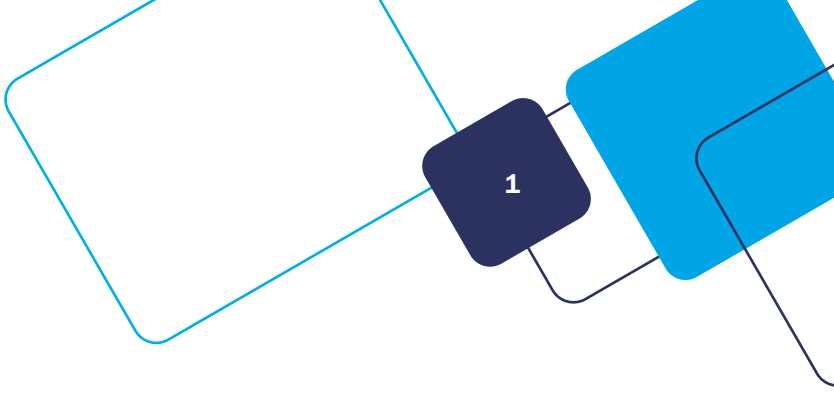
Department for  
**Employment  
and Learning**

[www.delni.gov.uk](http://www.delni.gov.uk)

**SUCCESS THROUGH  
STEM**







## Executive Summary

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*'Diversity isn't an altruistic aspiration; it's a competitive demand'*

(Bill Destler)

Both the Northern Ireland Executive's 'Programme for Government' and the Skills Strategy for Northern Ireland, 'Success through Skills - Transforming Futures', recognise that the future success of the Northern Ireland economy will require increased numbers of skilled workers with science, technology, engineering and mathematics (STEM) qualifications.

In Northern Ireland, some employers, who require STEM skills, are already experiencing difficulty recruiting and retaining enough staff with the required level of qualifications and skills.

The CBI 2013 Education and Skills Survey<sup>1</sup> (UK) said that "STEM skills are in widespread demand and nearly two in five firms (39%) that need employees with STEM skills and knowledge currently have difficulties recruiting staff. A similar proportion (41%) expects those difficulties to persist in the next three years."

The same survey said that "Shortages of STEM-qualified technicians (29%) and graduates (26%) are widespread among firms in the engineering, hi-tech/IT and science areas and are expected to intensify as economic recovery gathers pace, emphasising the need to focus on technicians, as well as graduates."

Businesses are increasingly aware of the need to take steps to grow the talent pool of STEM skills, with more than eight out of ten businesses (85%) now having links of some type with one or more school or college. The report states that the proportion of employers that offer work experience placements has risen to 81% in 2013 and nearly two thirds (64%) are involved in providing careers advice and talks.

The Social Market foundation<sup>2</sup> recently estimated a 40,000 per year shortfall in the number of STEM graduates in the UK. According to the National Skills Forum<sup>3</sup>, "The limited number of women entering science, engineering and technology (SET) exacerbates skills shortages in these sectors, reducing the productivity of SET organisations and making it harder for them to compete on the international stage."

In the Northern Ireland economy, high level STEM posts currently constitute over 11% of the workforce, with men outnumbering women **by nearly 3 to 1**. Contrast this with the overall employment situation in NI, where women comprise 47.3% of those aged 16-64 currently in employment, similar to the rate of 46.5% in GB<sup>4</sup> and it is clear that we need to

1 Link for CBI 2013 Survey

2 Social Market Foundation 'In the Balance: the STEM Human Capital Crunch'

3 National Skills Forum: Closing the Gender Skills Gap, 2009

4 Source: NISRA

take a proactive approach to address the gender balance within the STEM industries.

The 'Success through STEM Strategy' includes a recommendation to address the issue of gender bias, particularly the disparity between, on the one hand, the Physical Sciences and Engineering and on the other, Life Sciences. This is one of five recommendations that are Industry led and as such, the STEM Business group has carried out statistical research along with feedback from industry, culminating in a seminar with the Equality Commission, to engage further with businesses to look at the issue of gender bias, share best practice and identify additional steps that businesses can take to make careers in the STEM industries more attractive.

This challenge has been recognised by government and was highlighted in an Oral Statement to the Northern Ireland Assembly on 4th June by the Minister for Employment and Learning.

We welcome the initiatives and policies that have been introduced by the Department for Employment and Learning (DEL) and the activities by other bodies to attract more girls into STEM sectors. However, given the projected growth in these sectors and the skills shortages in these areas, a greater collaborative effort is needed from business, government and education to engage, encourage and inspire young women and girls. This needs to be at a number of levels:

- subjects chosen at school;
- further and Higher Education choices;
- career choices;
- recruitment and Retention within the STEM related industries; and
- career progression.

This report sets out the business case for gender equality and diversity within STEM businesses and includes:

- a set of good practice guidelines, with supporting case studies from some prominent STEM employers;
- a Northern Ireland CEO Charter for STEM employers; and
- relevant links to further information and sources of support.

We must challenge the stereotyping and bias that can still pervade our culture, particularly within the male dominated engineering and technology sectors. Attracting and retaining a more diverse workforce will maximise innovation, creativity and competitiveness. The message that the STEM industries provide exciting and rewarding career options is beginning to be heard locally, through increased engagement of business supporting for example, giving talks for Careers teachers, providing industry placements for DEL Careers Advisers and the Belfast Telegraph STEM Courses and Careers supplement, which was published in September 2013.

### Next Steps

Working with the Equality Commission for Northern Ireland, we plan to produce an “Addressing Gender Balance - a Good Practice Manual”, containing the Charter, the good practice guidelines and the supporting case studies and run a series of seminars supporting the implementation of good practice. The details of the seminars, which are planned for early in 2014, will be available on the Equality Commission’s website [www.equalityni.org](http://www.equalityni.org).

This report and the supporting seminars highlight the issues and examine how business can inspire young people, male and female, to consider careers in the STEM industries and create an environment that is welcoming and encouraging to all. We would ask you to look at the Charter, the good practice guidelines and the supporting case studies and see how they can be applied in your workplace, so that together we may all reap the dividend of having a more diverse workforce.

Our thanks go to all the companies and organisations that have supported the STEM Business group in the development of this report.

**Dr Joanne Stuart OBE,  
Chair STEM Implementation Group  
and Business Group**

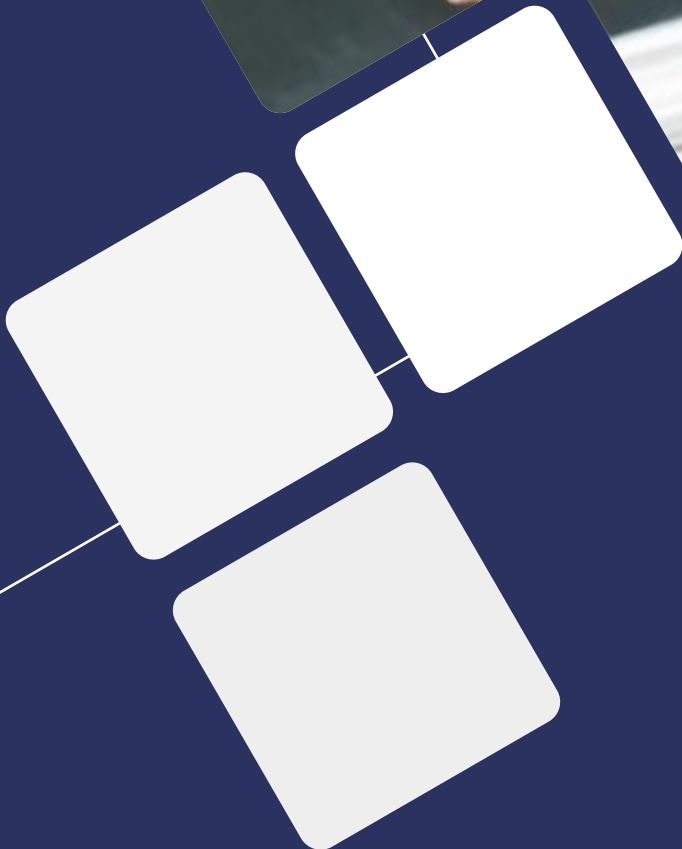
### Feedback & Further Information

The STEM Business Group would welcome any comments or queries you may have about any aspect of this report. Please contact the STEM Business Co-ordinator at [lorna.mcalpine@stembusinessgroupni.com](mailto:lorna.mcalpine@stembusinessgroupni.com).



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## Business Case for Gender Equality in STEM

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The business case for managing gender balance in the workplace was well made by no less than Warren Buffett in the May 2013 Fortune Magazine, when he said:

“For most of our history, women — whatever their abilities — have been relegated to the sidelines. Only in recent years have we begun to correct that problem.” He also said “The closer that America comes to fully employing the talents of all its citizens, the greater its output of goods and services will be. We’ve seen what can be accomplished when we use 50% of our human capacity. If you visualize what 100% can do, you’ll join me as an unbridled optimist about America’s future.”

However, as far back as 1977, American sociologist, Rosabeth Moss Kanter, a professor at Harvard University, was writing about the effects of tokenism on women working in a male dominated environment. She said that tokenism can become self-perpetuating; rather than paving the way for others, it reinforces low numbers of women, leaving outside intervention as the only means of increasing their presence.

Kanter argued that as the numerical proportions within a group ‘begin to shift so do the social experiences’. She talked about the idea of uniform (100:0), skewed (85:15), tilted (65:35) and balanced (60:40) groups, with an increasing proportion of the minority in each of the groups. This work, and that of Dahlerup in 1988, gave rise to the idea of the ‘Critical Mass’. This is where the minority

has become strong enough, say at 35% (in the tilted group), to influence the culture of the group and alliances between minority group members become a possibility.

### The effect of gender diversity on company performance and share valuation

European Research by Professor Michel Ferrary 2013<sup>5</sup>, of the Skema Business School, Geneva University, compared the performance of companies in the French Share Index CAC 40 for the year 2012. He found that in concrete terms, 100,000 euros invested early in January 2012 in the CAC40 index would represent 115,230 euros on the 31.12.2012 and 131,440 euros, if they had been invested in what Ferrary called the **Femina Index**.

The Femina Index is a diversified portfolio of 10 companies: three in the luxury industry, three in the financial industry, one in the food industry, one in the tourism industry, one in the health industry and one company in the communication industry. To be part of the Femina Index, the company had to have a minimum threshold of women in management i.e. 35% at the reference point in 2007. Ferrary justifies the figure of 35%, based on the work of the Rosabeth Moss Kanter, which stipulates that a minority group has to represent 35% of an organization to influence its operation and therefore its performance.

To what then does Ferrary attribute the superior performance of the more balanced companies?

### *Diversity as a performance driver*

Ferrary says that promoting diversity and enhancing the advancement of women in management /executive positions can contribute to the financial performance of companies for three reasons:

- recruiting women enlarges the size of the **talent pool** and therefore increases the probability of recruiting better quality staff;
- half of all consumers are female **consumers**. Employing women enables better understanding of the expectations of clients; and
- diversity improves the **decision making** process within the firm.

In 2011, the **Canadian Coalition of Women in Engineering, Science, Trades and Technology** (WinSett) published a literature review entitled '**Increasing Women in SETT: the Business Case**'<sup>6</sup>, which described a more detailed list of the benefits and supported them by evidence of direct economic indicators.

The benefits include:

- solution to skills shortages;
- access of employers to a broader base of talent;
- increased innovation potential;
- enhanced market development;
- greater return on human resource investment;
- stronger financial performance;
- improved governance; and
- increased national economic growth index.

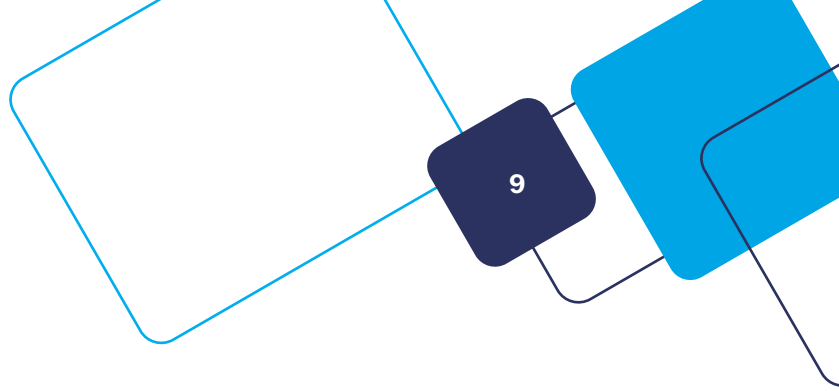
In the case of 'stronger financial performance', the paper cites as evidence several

international studies of the Fortune 500 companies in the US, as well as a UK study into FTSE companies and Swedish research. A study for the Conference Board of Canada concluded 'for those organisations that foster gender equality at all levels of the organisation the rewards are great –bottom-line results, lower turnover and employment branding that is attractive to talented, successful women, the kind of employees that all Canadian organisations seek.'

The WinSett review also said that enhancing the participation and leadership of women in science, engineering, trades and technology (SETT) fields will generate even greater positive impacts in the knowledge-based, technological and highly competitive global economy.

For the **United Kingdom Resource Centre**<sup>7</sup> for Women in Science, Engineering and Technology, **UKRC** (now incorporated into Women in Science and Engineering, WISE), improving gender equality in science, engineering, technology (SET) and the built environment is not just about social justice and fairness; rather the organisation states simply that gender equality makes good business sense. The UKRC says that the following are drivers to develop gender equality and bring about change in SET:

- become an employer of choice;
- improve business performance;
- retain knowledge and experience;
- respond to changing workforce demographics;
- tackle skills shortages;
- meet procurement standards and stakeholder requirements; and
- comply with legislation.



### Enterprise value from intentional investment in women

Perhaps the most detailed analysis of the Business Case for Gender Diversity comes from a **Deloitte Report called 'The gender dividend: Making the business case for investing in women', 2011<sup>8</sup>**

This report draws the distinction between the current industrial model operating in most organisations, which thinks of 'talent as a cost and women as a niche group', whereas in the knowledge economy, 'talent is an asset and women are key to both the talent and the consumer market place'.

Pellegrino, D'Amato and Weisberg further argue that any business case analysis of the gender dividend should have a dual focus: the impact of women internally as workers in the organisation and externally as customers. The authors argue that the business case for investing in women must take account of the 'compelling goals of attracting talent and capitalising on the growing market strength of women'.

The authors offer a detailed enterprise value map as a way of looking at the economic benefits.

### Enterprise Value

#### Operating Margin

- Reduce costs associated with recruitment, training, and retention.
- Increase efficacy of existing programs and communications because they address all employees.
- Reduce potential liability and legal costs of addressing claims.

#### Asset Efficiency

- Attract and retain top talent through more role models.
- Increase complex problem-solving capacity through gender diverse teams and leaders
- Increase innovation through gender diverse teams.
- Increase productivity through improved morale/esprit de corps.

#### Revenue Growth

- Leverage women's relationships and experience to attract new business and design new products.
- More effectively sell to this growing market segment.
- Mirror changing complexion of client organizations to compete more effectively

#### Expectations

- Build firm's brand through eminence of its people.
- Retain/build reputation of organization as market leader in developing talent.
- Become a talent magnet.



## The Picture in Northern Ireland

### Education and Industry

**At GCSE level** (based on 2011/12<sup>9</sup>), the gender balance across the total STEM subjects is fairly even, with girls making up 45.7% of pupils taking STEM subjects. The gender bias is more apparent within particular subjects, such as Physics (37.6% girls) and Design & Technology (22.8% girls). Double Science Award was one STEM subject where there was a slight bias towards girls (52%). Of those girls who took GCSE STEM subjects, 76.3% achieved the higher A\* - C grades compared with 75.6% of boys.

**At A-Level** (based on 2011/12<sup>10</sup>), the gender balance across the total STEM subjects is fairly even, with girls making up 47.3% of pupils studying STEM subjects. Only Biology, Chemistry and Psychology are studied more by girls than boys (with women accounting for 60%, 55% and 75% of total enrolments in these subjects respectively). Physics (31%), Mathematics (43%), Further Maths (25%), Design and Technology (25%) and Computer/IT related subjects (approx 41%) are subjects where the gender bias is most marked. Of those girls who took A-Level STEM subjects, 85.4% achieved higher A\* - C grades compared with 82.8% of boys. The largest difference is in Physics, where 83.9% of girls achieved A\* - C grade compared with 78.7% of boys. Physics, however is one of the least favoured choices for girls, although there has been an increase of 16% in the number of girls taking Physics since 07/08.

### On leaving school, females tend to be better qualified than males<sup>11</sup>

- 68% of females achieved at least 5 GCES at grades A\* to C, including English and Maths, compared with only 56% of males.
- 64% of females left school with 2 or more A-Levels, compared with only 47% of males.

### More females progress to further or higher education<sup>12</sup>

- 83% of females progressed to further or higher education, compared with 71% of males.
- 62% of 16 year old school leavers are male.

### There is a difference in the subjects that males and females study.

- 25% of males participants in further education are studying Science and Mathematics, Engineering and Manufacturing Technologies or ICT, compared with only 13% of females.
- 62% of total higher education STEM enrolments are male.
- Females account for 29.8% of those graduating from higher education in STEM subjects<sup>13</sup>.
- 74% of students in Computer Science are male.
- 79% of students studying Engineering and Technology are male.

9 Source: Department of Education

10 Source: Department of Education

11 Source: Department of Education: Qualifications & Destinations of Northern Ireland School Leavers 2011/12

12 Source: Department of Education: Qualifications & Destinations of Northern Ireland School Leavers 2011/12

13 Excluding biological science

## Summary

Education Level	Male (expressed as a % of total STEM enrolments)	Female (expressed as a % of total STEM enrolments)
GCSE	54.3%	45.7%
A-Level	52.7%	47.3%
Degree	62.5%	37.5%
<b>Average</b>	<b>56.5%</b>	<b>43.5%</b> <sup>14</sup>

### Low female uptake of work-based training in STEM<sup>15</sup>

- 8.6% of participants undertaking apprenticeships in STEM-related areas are female.

### More males work in STEM-related areas<sup>16</sup>

- Jobs in STEM-related industries currently account for 11% of total employment.
- The ratio of male to females employed in STEM-related industries is 3 to 1.
- Males currently outnumber females in the manufacturing sector by a ratio of 4 to 1.

### SELECTED STATISTICS from some Professional Institutes and others:

#### British Computer Society<sup>17</sup>

With new research showing that women computer science graduates are less likely to take up an occupational role that is defined as 'ICT work' than men (22% versus 39%), BCSWomen, part of BCS, the Chartered Institute for IT, is working with universities and students to raise awareness of the great careers IT offers.

The move is part of the group's wider campaign to encourage more women to take up or return to careers in IT; today current estimates indicate that women represent under a fifth of ICT managers, 21% of computer analysts and 14% of software professionals.

<sup>14</sup> Source: Department for Employment and Learning Ministerial Oral Statement on Gender Issues, HESA and Department of Education

<sup>15</sup> Source: Department for Employment and Learning Statistical Bulletin ApprenticeshipNI, Statistics from September 2007 to January 2013

<sup>16</sup> Source: DETI, NI Labour Force Survey and DEL Ministerial Oral Statement on Gender Issues

<sup>17</sup> Source: BCS website <http://www.bcs.org/content/conWebDoc/50221>

### Engineers Ireland<sup>18</sup>

Extract from **'Engineering perspectives: a report on the careers of and challenges facing engineers in Ireland in 2013'**. This was published by Engineers Ireland, based on a survey by HRM Recruit. Engineers Ireland has a membership which covers the whole island of Ireland.

Some highlights of the survey include:

- 'Men outnumber women in the engineering profession by nearly nine to one.
- 75% of engineers surveyed belong to a professional engineering association.
- Less than 5% of engineers are currently unemployed.
- Male engineers are almost twice as likely to work in senior management, compared with female engineers.
- Engineering is an extremely diverse profession, with numerous career streams.
- 40% of professionals with an engineering qualification, but working in non-engineering roles, do so in General or Operations Management.
- Nearly 40% of engineers surveyed are with their employers for more than eight years.
- 45% of engineers surveyed received a salary increase in the last three years.
- More than 95% of engineers surveyed see the ability to communicate with non-engineering professionals as vital.'

### Women On Boards of FTSE 100 Companies- Extract from WISE report

The report **'Women in Science, Technology, Engineering and Mathematics: from Classroom to Boardroom UK Statistics 2012'**<sup>19</sup> explored 'female representation on the Boards of the Financial Times Stock Exchange (FTSE) 100 companies in STEM and non-STEM sectors. The secondary analysis uses data from the Cranfield University School of Management Female FTSE 100 report 2012 (Sealy and Vinnicombe, 2012). The report ranks the FTSE 100 companies according to the percentages of women they have on their Boards. From this list, 57 companies are classified as STEM and 43 non-STEM.

At the time the Cranfield report was published, 15% of Board Directors of FTSE 100 companies were female (Sealy and Vinnicombe, 2012). 13% of the Board Directors of STEM FTSE 100 companies were female, compared with 17% of non-STEM Board Directors. Closer analysis reveals important differences in numbers of women on Boards. All non-STEM FTSE 100 companies have at least one woman on their Board. Almost two in ten FTSE 100 STEM companies have no women on their Board. Equally, around six in ten non-STEM FTSE 100 companies have two or more women on their Board, compared with around four in ten STEM FTSE 100 companies.'

18 Source [www.engineersireland.ie](http://www.engineersireland.ie)

19 Source: [http://www.wisecampaign.org.uk/files/useruploads/files/wise\\_stats\\_document\\_final.pdf](http://www.wisecampaign.org.uk/files/useruploads/files/wise_stats_document_final.pdf)





## How can the gender dividend be realised?

Senior managers in companies must be convinced of the benefits of gender diversity and to this end several organisations across the world have developed the idea of **CEO Charters**. By signing up to a CEO Charter, companies send a strong public message, demonstrating their commitment to supporting gender diversity and equality, to increase the participation and progression of women in science, technology, engineering and maths (STEM).

Two examples of CEO Charters are detailed below for information - the UKRC/WISE CEO Charter, which is specifically for STEM and the UN Women CEO Charter, which relates to gender equality and diversity for all businesses.

### UKRC/WISE CEO Charter

#### The CEO Charter

'By signing up to the UKRC Charter, the CEO and senior management of each signature business or organisation commit to:

- Actively supporting the aim of increasing the participation, at all levels, of women in Science, Engineering and Technology (SET).
- Developing and communicating the business case for gender equality within their business or organisation, their supply chain and their wider networks.
- Promoting and showcasing the business or organisation's approach and examples of best practice at relevant events and forums.
- Developing clearly defined strategies and implementing practices which encourage women to enter and progress in, or return to, SET careers.

Charter signatories are encouraged to demonstrate progress in their business or organisation toward the aim of increasing the participation and progression of women in SET. They can do this in a number of ways, such as:

- taking part in benchmarking surveys;
- assessing their business or organisation culture using the UKRC Culture Analysis Tool;
- applying for a UKRC SET Fair Standard;
- taking positive steps to increase the recruitment and retention of women in SET, including placements and support for returners;
- setting up and running a mentoring or networking scheme for women; and
- training staff in gender equality.'

The UKRC/WISE Charter has been signed by over 100 UK organisations, including large corporate companies, small and medium sized enterprises, professional bodies, education institutions, research councils and learned societies.

### UN Women CEO Charter

Women's Empowerment Principles – Equality Means Business, produced and disseminated by the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the United Nations Global Compact.

### CEO Statement of Support and List of Signatories

'We, business leaders from across the globe, express support for advancing equality between women and men to:

- bring the broadest pool of talent to our endeavours;
- further our companies' competitiveness;
- meet our corporate responsibility and sustainability commitments;
- model behaviour within our companies that reflects the society we would like for our employees, fellow citizens and families;
- encourage economic and social conditions that provide opportunities for women and men, girls and boys; and
- foster sustainable development in the countries in which we operate.

Therefore, we welcome the provisions of the Women's Empowerment Principles – Equality Means Business, produced and disseminated by the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the United Nations Global Compact. The Principles present seven steps that business and other sectors can take to advance and empower women.

Equal treatment of women and men is not just the right thing to do – it is also good for business. The full participation of women in our enterprises and in the larger community makes sound business sense now and in the future. A broad concept of sustainability and corporate responsibility that embraces women's empowerment as a key goal will benefit us all. The seven steps of the Women's Empowerment Principles will help us realize these opportunities.

We encourage business leaders to join us and use the Principles as guidance for actions that we can all take in the workplace, marketplace and community to empower women and benefit our companies and societies. We will strive to use sex-disaggregated data in our sustainability reporting to communicate our progress to our own stakeholders. Please join us.'

Since the launch of the Women's Empowerment Principles in 2010, over 550 CEOs from around the world have signed the CEO Statement of Support for the WEPs, signalling their support for gender equality and the guidance provided by the Principles.

## Northern Ireland STEM CEO Charter

**The STEM Business group and the Equality Commission for Northern Ireland have devised a Northern Ireland STEM CEO Charter and have taken feedback from local businesses and other organisations which employ STEM professionals. We would like to encourage organisations to commit to the Charter.**

..... is a STEM employer.

This means we are committed to ensuring that men and women have equality of opportunity, in terms of accessing our jobs in the areas of Science, Technology, Engineering and Mathematics.

We are committed to ensuring that we provide equality of opportunity in relation to recruitment, training, development, promotion, appraisal and with regard to all of our employment policies.

To show our commitment as a STEM employer, we are doing the following:

- Implementing an equal opportunities policy, that is regularly updated, and is supported by training, for all of our staff.
- Implementing appropriate positive action measures, such as pre-employment training, welcoming statements and personal development courses for women, where they are under-represented in certain job areas and at certain grades.
- Challenging stereotypical attitudes, preconceptions and prejudice that might exist in relation to women working in STEM jobs.
- Work with our female employees to benchmark the current working environment against best practice examples and to identify ways to improve its accessibility to women.
- Monitoring access to all of our policies, to ensure both women and men enjoy equality of opportunity in terms of access to employment, training, development, promotion and flexible working.
- Utilising various measures, including staff awareness surveys and exit interviews, to help us ensure that all employees feel that they enjoy equality of opportunity.

Signed

Date



## Examination of Best Practice

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Other ideas to reap the gender dividend include the examination of organisations' good practice through case studies and the development of guidelines. The Guidelines, set out below, were developed through extensive desk research on both academic and practical examples. These Guidelines have been given to other organisations for comment: Equality Commission, Department of Employment and Learning, Queen's University Belfast, WRDA, enei, WISE, the Equality Coalition and several STEM businesses.

### Good Practice Guidelines for addressing the STEM gender gap

#### *ROLE MODELS- PRIOR TO RECRUITMENT*

1. Encourage staff to become STEM Ambassadors, working with organisations such as W5, Sentinus, BiTC or School Employer Connections.
2. Participate in Careers talks and fairs.
3. Use welcoming statements in recruitment advertisements.
4. Use female role models in advertising and other brochures.

#### *SUPPORTIVE PERSONNEL POLICIES*

5. Refer to family friendly policies in recruitment literature.
6. Refer to flexible working practices in recruitment literature.

7. Refer to any home working policies in recruitment literature.
8. Consider using a female only undergraduate scholarship scheme.
9. Use of salary sacrifice schemes e.g. Employers for Childcare, to support working parents with childcare costs.
10. Consider partnering pregnant employees with a mentor or buddy, who has recently returned to work after maternity leave.

#### *NETWORKING*

11. Utilise existing networks for women which address work issues.
12. Establish a women's network, if none exists in your business or industry.

#### *CAREER DEVELOPMENT*

13. Enable all staff to articulate their career aspirations at regular intervals.
14. Recognise that career aspirations may change, as caring roles change over time.
15. Consider horizontal career moves to develop breadth of knowledge and respect across the business.
16. Ensure that all staff members are clear about career progression and promotion procedures.

*MENTORING*

17. Consider the use of mentoring within and outside the organisation.
18. Consider partnering a male mentor with a female mentee and the reverse.

*ROLE MODELS- POST RECRUITMENT*

19. Increase visibility by having female speakers at internal and external meetings.
20. Have female representation on internal/ external committees.

*MONITORING PROGRESS*

21. Obtain feedback from staff about these issues and suggestions, particularly in exit interviews.
22. Take all opportunities to challenge unconscious bias.

## Best Practice Case Studies

Many organisations in Northern Ireland display good practice, some of which were discussed at the joint STEM Business group and Equality Commission seminar in June 2013. For this report, we have attempted to capture this good practice and other exemplars for the benefit of other organisations.

If you like to profile or benchmark some of your own practice, please contact [lorna.mcalpine@stembusinessgroupni.com](mailto:lorna.mcalpine@stembusinessgroupni.com)

### Best Practice Case Study 1 -

#### Schlumberger

Schlumberger is the world's leading supplier of technology, integrated project management and information solutions to customers working in the oil and gas industry worldwide. Employing approximately 120,000 people, representing over 140 nationalities and working in more than 85 countries, Schlumberger provides the industry's widest range of products and services from exploration to production. Their people invent, design, engineer and apply technologies to help customers find and produce oil and gas more efficiently and safely.

#### Locally .....

Schlumberger has been established in Northern Ireland since 1958. The company currently employs approx 200 employees in the Newtownabbey Manufacturing Facility (previously Camco).

#### Scholarship for female engineering students:

Schlumberger Belfast, in collaboration with Queen's University Belfast, has developed a female scholarship programme aimed at A-Level students. The scholarship programme offers financial rewards to the successful applicant, who undertakes a Mechanical Engineering Sandwich Masters degree at Queen's University Belfast. Additionally, the successful applicant has the opportunity to learn from experts during internships at the Schlumberger facility in Newtownabbey during their studies. Schlumberger, globally, recognises that diversity is a key source of competitive advantage and believes it is integral to future business success. This female scholarship is aimed at attracting young women to a career in engineering, boosting gender diversity within industry and promoting the excellent STEM career opportunities available. Schlumberger Newtownabbey Product Centre is currently under-represented by females, with only 10% of the workforce being made up of women. The Product Centre management team is committed to increasing significantly that number. The STEM programme is a long term initiative, which is making progress. In comparison, at Schlumberger overall, 18% of the engineers are women. In developing the scholarship, Schlumberger worked with the Equality Commission NI, which agreed and approved Schlumberger to run a female only scholarship as a "Positive Outreach Initiative", with a view to attracting more females towards engineering. The programme is a training initiative and not a definitive route to employment.

**STEM Ambassadors:**

Schlumberger Belfast works in collaboration with the W5 STEM Ambassador Programme and currently has an active team of registered STEM Ambassadors. STEM Ambassadors are people from STEM backgrounds who volunteer as inspiring role models for young people. They can contribute both to regular lessons, or participate in extra-curricular activities such as STEM Clubs, Careers Days and visits. A few examples of STEM Ambassador work which Schlumberger employees have participated in are: teachers' careers days, careers fairs, a STEM Club Event for teachers at W5, interview skills days at schools, Northern Regional College Careers Academy, vocational apprenticeships careers events and work experience on site.

Schlumberger recognises that working with schools is key to attracting and developing the engineers of the future, both for the Schlumberger Belfast Mechanical Engineering Apprenticeship entry route and Graduate Engineer entry route. The STEM Ambassadors Programme is a free resource for schools, offering support from people with STEM backgrounds to help entice and inspire students into science, technology, engineering and maths careers. The resource enables teachers to make links from the curriculum to how STEM is practised in the world of work. Working in collaboration with the STEM Ambassador Programme offers insurance for employees to attend STEM events, provides the appropriate AccessNI checks and partners Schlumberger employees with the right STEM initiatives, which will provide benefit for both the schools involved and the business.

**Girls' Schools' Open Day:**

Each year, Schlumberger Belfast hosts a "Girls' Schools' Open Day", where 50 Year 12 girls from a cross section of schools in the Greater Belfast area visit the Belfast Product Centre, along with a STEM or Careers teacher. The aim of this event is to raise awareness of STEM and the career opportunities available, as well as being an opportunity for Schlumberger to give back to the local community. The event has been running successfully for four years and is starting to pay dividends, in terms of seeing applicants for the scholarship programme and internships from the groups of students who attended the open day in previous years.

**Best Practice Case Study 2 - Northern Ireland Electricity (NIE)**

NIE owns and maintains the electrical wires and meters for everyone in Northern Ireland, no matter who bills the customer for energy usage. The company has 1,300 employees, who work around the clock to plan, build, repair and develop Northern Ireland's electricity network. NIE has predicted a skills shortage in power engineering within the next ten years and as such, has developed a series of measures to address both this issue and, at the same time, that of gender balance. The Energy and Utility Skills Council has predicted a skills shortage across the UK, not just within Northern Ireland.



### Careers talks and outreach programme-

NIE currently attends approximately 50 careers fairs and events per year, in addition to their normal outreach activity, such as *First LEGO League*, Sentinus Research and Development Programme, IET SMART Energy Project, NIE STEM career and activity days, NIE industrial bursaries and working with Queen's University Belfast to increase the current uptake of places for Electrical and Electronic Engineering. NIE also recently took four Department of Employment and Learning Careers' Advisers for a one week placement.

### Benefits of Outreach Work

- All graduates and undergraduates are heavily involved in outreach work as part of their continuous development in their first three years with NIE.
- It enables them to become STEM Ambassadors, which continues to build their CPD points for their IET accreditation.
- It improves their communication, planning and presentation skills, as part of their continued development.
- NIE believe that using practising engineers is a powerful promotional tool for NIE.
- The company states that their graduates, undergraduates and apprentices are passionate about inspiring young people and encouraging them to continue studying STEM subjects.
- NIE says that outreach provides the opportunity to challenge the stereotypes about STEM subjects and also careers in STEM.

In addition, NIE displays good practice in other areas related to the guidelines:

- All new graduates and undergraduates will become **STEM ambassadors** within 3 months of joining NIE (see Schlumberger Case Study for details of the STEM Ambassador programme).
- NIE utilises their female apprentices and graduates as **role models in advertising** for both our apprenticeship and graduate route
- NIE has the Employee Purchase **childcare scheme** which is unique to them and it also has the salary sacrifice scheme. NIE offers all employees the opportunity to join the Childcare Voucher salary sacrifice scheme and the Employer purchase scheme. Vouchers are provided for both schemes by Employers for Childcare.
- To be eligible for the Employer Purchase scheme, an employee must have a child under four in full-time, registered day-care (pro rata for part-time employees) and their spouse/partner should not be in receipt of a similar benefit from another employer.
- NIE has women in senior roles who act as **mentors** for their young, female under, graduates.
- NIE has an annual **Planning and Performance Review** (PPR), where the individual will review this year's performance and also articulate where they want to go in the following year or beyond. These are reviewed every six months

- NIE offers three **scholarships** with Queen's University, Belfast, for first and second year students studying Electrical and Electronic Engineering. Scholarships include financial support, mentoring and invaluable experience within the power industry.
- NIE utilises **development roles** within the company to develop individuals' breadth of knowledge and experience.
- Clarity about **career progression and promotion procedures** is given through the PPR process and also highlighted for new entrants during their induction and repeated after three months service in NIE.
- NIE uses **mentoring** from day one with apprentices and graduates. The apprentices will be mentored by a team manager, or the apprentice co-ordinator. The graduates will have quarterly mentoring sessions with a Director of the business. Mentor and mentee are matched up, depending on the needs of the individual.
- Female graduates and apprentices are regularly utilised at internal and external meetings, to give them more **visibility** and to try and encourage females into the industry.
- NIE uses **exit interviews** for all leavers from NIE and assesses the information that is obtained.
- NIE has recently re-briefed all staff in NIE on **respecting differences** within NIE. This was done in conjunction with an equality expert from a local university.

### Best Practice Case Study 3 - Queen's University Belfast

Over the last decade, Queen's has been one of the leading higher education institutions in valuing and supporting women's career advancement. Over the years, the University has created an environment in which the contribution of women is fully valued. This is a continuing process.

This commitment was recognised in 2011, when the University was listed as a Top 50 Employer for Women. In 2012, Queen's became one of only four universities to hold a silver Athena Swan award. The Athena Swan awards<sup>20</sup> recognise and celebrate good practice in recruiting, retaining and promoting women in Science, Technology, Engineering, Mathematics and Medicine (STEMM) in higher education. Queen's also has the distinction of having all of its 11 Science, Engineering and Technology (SET) schools holding SWAN awards: one Gold, nine Silver and one Bronze.

#### Mentoring

When Queen's University conducted a "listening" exercise with its female staff in the late 1990s, one of the recommendations arising was the development of a Mentoring exercise for female academics. Following a successful pilot, the scheme has run every year since 2001/2002, with senior academic women providing advice and support to more junior colleagues, on issues related to career management and planning, helping women take responsibility and be more self-reliant about their careers, providing support and increasing confidence and developing knowledge, skills and expertise.

The scheme has now been running for eleven years, during which time a total of 181 women have been mentored.

### Promotion seminars

Queen's has carefully monitored the success rates of its academic staff applying for promotion for a number of years and the analysis shows that while women were appointed commensurate with their applicant rate, they tended to apply in lower numbers than might be expected. To address any underlying concerns about the promotions process and allay any doubts about fairness, a series of promotions seminars have been held in recent years, aimed at those women who want more information about how the promotions exercise works in practice and how to make an informed decision as to when the moment has arrived to make an application for promotion. The seminars are resourced from the Queen's Gender Initiative, the Equal Opportunities Unit and include an input from a Pro-Vice Chancellor.

### Culture

The culture of an institution concerns the visible structure and practices, such as policies and procedures that can be monitored and changed if necessary. It is also about what people say and believe, as well as the underlying unconscious thoughts and beliefs that are much harder to change, though their effects can be mitigated.

Queen's has tackled the issue of culture by:

- ensuring greater **visibility of women** among existing academic staff. This is achieved through replacing generic university images of academics on web home pages with real female members of staff and highlighting women who take on particular roles, such as that of Science and Engineering Ambassador; and
- taking specific actions to encourage **increased representation of women on committees.**

Steps include: reviewing the selection processes; writing to all eligible women staff to encourage them to apply; asking ex-officio members whether they might nominate a woman to attend in their place, drawing up a suitable list of women to encourage to apply for lay positions on Senate; asking existing committee members to buddy new members; and monitoring committee membership annually

- Proactively **reviewing the gender balance** on all policy and decision-making committees, to achieve a substantial increase in the female, academic membership of strategic School and Centre committees;
- inviting external women on a regular basis as **guest speakers** and external examiners;
- including representation from **female** postgraduate students and postdoctoral fellows at **staff meetings;**
- ensuring that administrative responsibilities, student supervision and marking workloads are transparent;

- ensuring that pastoral roles within a School are taken up by men as well as women;
- in SET Schools, holding an **annual lecture on the theme of women** in SET for women in the School; and
- addressing the under-representation of females in portraits hung in the University's Great Hall, by commissioning **additional portraits of distinguished female graduates**, or past office holders

#### Best Practice Case Study 4 - Schrader Electronics Ltd

For 25 years, Schrader Electronics Ltd (SEL), has been the market leader in the Design and Manufacturing of Tyre Pressure Monitoring systems. SEL also manufactures electronics for the Automotive and Industrial markets. SEL locally employs over 1000 employees across several disciplines.

Schrader Electronics recognises the need to engage, attract, recruit and develop individuals in STEM-related disciplines and to further promote the role of females within STEM disciplines. In response to this, the organisation has a number of initiatives to address these two areas.

#### External Engagement (STEM)

Schrader Electronics undertakes a significant amount of external engagement to support STEM across the province. This includes engagement with schools, colleges, universities, training organisations, government agencies etc. In particular, Schrader Electronics has:

- 20 **STEM Ambassadors**, who actively work across the local and wider community to further promote STEM;
- sponsored several **STEM awards** at schools, colleges and universities to strengthen the STEM profile;
- hosted several tours and visits for schools, colleges and universities, to showcase career opportunities within STEM;
- supported specific **STEM initiatives** at colleges and universities, including the Northern Regional College Engineering Careers Academy and the Queen's University Engineering Leadership Programme. This helps strengthen the STEM profile between learning establishment and industry;
- supported **STEM discussions** at various government advisory groups, to ensure that STEM continues to be placed high on the business agenda; and
- participated in numerous careers fairs at schools, colleges and universities, to showcase career **opportunities in STEM**.

#### Training and Development (STEM)

As an Investor in People organisation, Schrader Electronics invests heavily in the training and development of all their employees. Training and development is promoted at all levels within the organisation and it has number of partnerships and external accreditation to enhance its development portfolio. This includes Institute of Leadership & Management, Engineering Training Services and City & Guilds centre status. More recently, the organisation has developed partnerships with the Institute of Mechanical Engineers and the Institute of Engineering Technology, further developing STEM thinking within the organisation.

Schrader Electronics develops employees on a day-to-day basis in STEM-related subjects and in particular, they operate several training and development programmes including:

- a Graduate Development Programme to support graduates in making the transition from student to employee. This year (2013), the organisation has recruited 31 graduates, with 27 of them from **STEM disciplines**;
- an Undergraduate Development Programme to provide valuable work experience to students, whilst tapping into fresh ideas and thinking that students bring to their organisation. This year (2013), the organisation has recruited 20 undergraduates, with 18 of them from **STEM disciplines**; and
- an Apprentice Development Programme to continue the pipeline of talent for key technician roles within the organisation. There are a total of 13 apprentices employees at Schrader Electronics, all of whom are engaged in **STEM roles** and study.

### Mentoring

Schrader Electronics has created a **Mentoring framework** with approx 60 designated company mentors. Each mentor has successfully completed the Institute of Leadership & Management Level 5 Mentoring Certificate and they are actively involved in mentoring employees at various levels within the organisation.

### Gender Promotion (STEM)

Schrader Electronics supports and values the role that women play in STEM disciplines and has supported gender balance initiatives. This has included:

- utilising **female role models** to present to STEM students at career events at Schools, Colleges and Universities;
- showcasing the **roles filled by females** at various STEM events;
- featuring **female role models** in company advertising and promotional activities for both their Undergraduate and Graduate Development Programmes; and
- participating in various government agency focus groups on the topic of **gender balance initiatives**.

### Best Practice Case Study 5 -

#### Ulster Bank (part of the Royal Bank of Scotland (RBS) Group)

##### Networking

The local Ulster Bank women's network, Women in Touch (WIT), was launched to support women in managerial roles to network, share experiences, learn from each other and realise their potential. WIT has the benefit of broadening the participants' knowledge of business matters beyond their everyday focus. The WIT network offers Ulster Bank employees the opportunity to develop and advance their careers and to become involved in activities that will challenge and inspire them.

Extensive consultation was carried out to determine the most appropriate time for the meetings to take place and it was decided that early evening suited best, directly after work and very strictly kept to time. The management nature of topics of the sessions has attracted the interest of male employees and they have been made welcome at the meetings. Meetings take place on a quarterly basis.

Nationally and internationally, RBS has taken a lead in the networking concept too, in that the RBS Focused Women's Network (FWN) was launched in 2007, to support the banking group in actively attracting, developing and retaining talented women at RBS.

In the last three years, the FWN has grown from 2,000 to 10,000 members across 31 countries. This includes some 300 men, who recognise the value that a diverse team can bring to the business.

### **Best Practice Case study 6 - Allstate NI - connecting with the Education Community**

#### **Allstate NI Provides some Teacher Training For New A-Level**

Allstate and other ICT employers were involved with the Council for the Curriculum Examinations and Assessment (CCEA) and teachers in the development of a new A-level in Software Systems Development (SSD), to help to meet industry needs.

As part of the 'Dragons' Den – It's Time to Give Back' initiative and after discussion with the CCEA, Allstate NI's training department created the 'Allstate Teachers' Technology Training' (AT3) programme.

The new CCEA A-Level commenced in September 2013 and in order to provide some up-to-date training in the modern computer programming language C#.NET, Allstate invited all post-primary schools across NI to send a teacher to participate in a week-long course. The customised course was attended by 35 teachers from all over NI and was held at the end of June 2013 in the Allstate NI Building, Belfast.

In addition to the training, teachers were given a full set of C#.NET course material, including class notes, assessments, sample code and sample projects geared towards the new A-Level, for them to practice and use with their students.

This course was very well received by the teachers, who praised both the quality of the training and the materials. Indirectly, this training is supportive of the teachers as role models for the young people in school, as it developed their skills in the language.

As most of the teachers at the training week were female, this course has a further impact on young women in the classroom.

The newly developed skills have been put to good use in schools, not just the A-level classes, but also through teachers running lunch time and after school clubs in C#.NET. These clubs have been very popular and in some cases, have been over-subscribed.

#### **Allstate NI hosts visits from schools**

Some of the schools whose teachers participated in the C#.NET training were given the chance to bring some A-Level computing pupils to visit the Allstate premises. The feedback from the pupils was very positive, as before the visits they could not visualise what a programmer did, or how they worked, but afterwards, the pupils said that they understood much more about the daily life of a programmer. Allstate NI also supports female STEM events through the BringITOn campaign and delivers many presentations to all girls' schools, to encourage more females into the industry.

#### **Family Friendly Initiatives**

In addition, Allstate NI operates a raft of family friendly policies and initiatives, including a free car seat for the first child, flexible working, condensed working, working from home, child tax credits, emergency time, duvet days, Bring your Child to Work day, sports & social events and organised family cinema trips. The company also has a high rate of females returning to work after maternity leave, compared with similar industry sectors, as well as a higher percentage of female team managers and senior managers.

Allstate NI has received over 120 awards for its HR and health & wellbeing practices and has received the highest standard for Investors in People at Gold level and is an Investors in People Champion.

#### **Best Practice Case Study 7 - Atkins**

Atkins is the UK's largest design, engineering and project management consultancy, providing multidisciplinary technical expertise. The company provides advice and engineering design for public, regulated and private sector clients. Its areas of operation include water, environment, education, aerospace, defence and infrastructure design, as well as significant activity in transportation.

Atkins has over 9,300 staff across the UK, with 75 staff based in the office in Belfast. Of the 75 staff in Northern Ireland, there are 69 people in STEM careers. Of the 69 STEM staff, 32% are women engineers and scientists. This is higher than the figure of 25% for all STEM posts in Northern Ireland.

#### **Gender Balance Planning**

Atkins' vision is 'to be the world's best infrastructure consultancy' and that means having the best and most talented people from the sector working for the Atkins group of companies. Atkins' senior Management Team were aware that research by Cranfield University and others had demonstrated that businesses with good gender balance perform better, have deeper, more resilient client relationships and grow faster than other companies.

In this context, in early 2011, Allan Cook, chairman of the Atkins plc board, challenged each Atkins business to develop a plan to improve diversity and hence become a better business.

The UK Gender Balance Focus Group (GBFG) was formed on behalf of the UK Management Team in response to this challenge. Each business in the UK appointed a representative on the GBFG and a UK Gender Improvement Plan was produced with 22 actions to implement. Well over half the actions contained in the plan have been achieved, with others making good progress and three or four long-term aims, which will take longer to fulfil.

In addition, each business has produced its own Gender Improvement Plan, tailored to its particular business and good progress has also been made with those plans. One of the ways to improve gender balance is to retain those women already employed, as well as seeking to increase the proportion of women joining the company.

The Belfast office is employing the Gender Improvement Plans from the various businesses based in Northern Ireland and has recently sponsored a young women engineer through university and provided her with a work placement.

### **Leadership**

Fifty of the organisation's most senior women leaders have joined together to form the Atkins Women's Leadership Council, to help to support the objective to have more women in senior positions in the years to come.

Chaired by Sara Lipscombe, Group communications director and Anne Randall, Group legal director, both members of the Senior Leadership Team, the Women's Leadership Council members will act as catalysts, role models, sponsors and mentors to aspiring professionals, including those based in the Belfast Office.

### **Networking**

Atkins' women's network, the Women's Professional Network (WPN), has been set up to offer a networking opportunity, where women can share experiences, expertise and thoughts. The WPN talk about many different topics, but with an emphasis on how to address the gender balance within the engineering sector.

Several of Atkins' larger UK offices are running WPN events, with other smaller offices aiming to follow suit soon. The women in the Atkins Belfast office will be hosting their first WPN event in December 2013.



### Development

Atkins sponsors a Women's Development Programme, run by Skills4 UK Ltd. Over the last two years, 123 female employees have gone through the programme. A further 60 women are attending the programme in 2013.

Candidates were nominated from all across the UK and a recent survey demonstrated that participants felt the programme has been successful in helping them with their career development.

One women engineer from Belfast completed the programme in 2012, one is currently on the programme and two are due to enter the programme in 2014.

### Communicating with young women

Atkins in partnership with Royal Academy of Engineering, BP and Rolls Royce produced a booklet in September 2013, **'Britain's got talented female engineers, Successful women in engineering: a careers research study'**<sup>21</sup>. This publication reported on a survey of 300 female engineers and profiled several women from different engineering disciplines. The booklet also attempts to dispel some of the myths and misunderstandings about being a female engineer.

### Commitment

Based on the responses from the survey, the companies involved made three commitments, stay positive, (about what engineering has to offer everyone), profile role models and clear a (career) path.

21 [http://www.atkinsglobal.com/~/\\_/media/Files/A/Atkins-Global/Attachments/corporate/about-us/our-publications/Atkins\\_Britains%20got%20talented%20female%20engineers.pdf](http://www.atkinsglobal.com/~/_/media/Files/A/Atkins-Global/Attachments/corporate/about-us/our-publications/Atkins_Britains%20got%20talented%20female%20engineers.pdf)



## Sources of Support

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### **Equality Commission**

Equality House  
7 - 9 Shaftesbury Square  
Belfast  
BT2 7DP  
Tel: 028 9050 0600  
Textphone: 028 9050 0589  
Fax: 028 9024 8687  
<http://www.equalityni.org>

### **Labour Relations Agency**

2-16 Gordon Street  
Belfast, BT1 2LG  
Tel: 028 9032 1442  
Fax: 028 9033 0827  
<http://www.lra.org.uk>

### **STEM Business Subgroup**

Contact: Lorna McAlpine, STEM Business Subgroup co-ordinator  
Email: [lorna.mcalpine@stembusinessgroupni.com](mailto:lorna.mcalpine@stembusinessgroupni.com)  
Tel: 028 9090 5378

### **WISE (Women in Science and Engineering)**

WISE Campaign  
Quest House  
38 Vicar Lane  
Bradford  
BD1 5LD  
Tel: 01274 724009  
<http://www.wisecampaign.org.uk/>

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