



## **Close the Gap response to the Science and Innovation Strategy for Scotland: Consultation Paper**

### **1.0 Introduction**

- 1.1 Close the Gap is a partnership project, which works across Scotland to promote positive activity to address the gender pay gap. Partners include the Scottish Executive, Scottish Enterprise, Scottish Trades Union Congress (STUC) and Equal Opportunities Commission (EOC).
- 1.2 Close the Gap works with employers, economic development agencies and employees. The breadth of partnership recognises that equal pay is a productivity issue as well as an issue of fairness and equality, and that narrowing the gender pay gap would return aggregate productivity gains to the Scottish economy.
- 1.3 Current priority areas of work for the project are capacity building within: large private sector organisations (with a specific focus on the finance sector), higher education institutions and Scotland's Colleges, small and medium enterprises, and STUC-affiliated trades union.
- 1.4 Key outputs of the project to date have been:
  - The first outdoor advertising campaign around the pay gap in Scotland;
  - Capacity-building training for customer-facing staff within Careers Scotland and Business Gateway;
  - Development of online training provision for Scottish Enterprise National staff around the pay gap;
  - Work with large individual private sector and public sector organisations to identify and address gender gaps;
  - A range of events to build capacity within STUC-affiliated trade unions, including an annual legal update for reps and full time officers;

- A guide to bargaining for equality for TU reps;
- Toolkits for small and medium enterprises to enable them to conduct quality equal pay reviews, and to carry out job evaluation for the purposes of ascertaining equal value;
- Developing undergraduate and postgraduate modules around women and the labour market, in partnership with the University of the Highlands and Islands;
- Conducting research into the pay gap in the Highlands and Islands.

## **2.0 Occupational segregation**

- 2.1 The Close the Gap partnership recognises that horizontal and vertical occupational segregation is a key cause underpinning the gender pay gap.
- 2.2 Women’s employment is highly concentrated by occupation, with female-dominated occupations generally the lowest paid. The so-called “5 Cs” of cleaning, catering, clerical, caring, and cashiering (retail) work are examples of low-paid, stereotypically female occupations. For every ten women in employment in the UK, six work in just ten occupations, typically those that pay the least<sup>1</sup>.
- 2.3 “Crowding” of women into low-pay, low-status occupation means that women’s skills are not effectively utilised by the labour market. The Women and Work Commission estimates that removing barriers to women working in stereotypically male occupations, and increasing women’s participation in the labour market, could be worth between £15 billion and £23 billion or 1.3 to 2.0 per cent of GDP<sup>2</sup> to the UK economy.

## **3.0 Theme 5: Modernising science education and promoting science careers**

- 3.1 The Roberts Review of the supply of people with science, technology, engineering and mathematics (STEM) skills and the *Set Fair* report on women in STEM occupations both identify under-representation of women as a key challenge for the sector.

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<sup>1</sup> Women & Equality Unit (2004) *Equality, Opportunity and Choice: Tackling Occupational Segregation* Department for Trade and Industry, London.

<sup>2</sup> Women and Work Commission (2006) *Shaping a Fairer Future* Department for Trade and Industry, London.

- 3.2 Roberts identifies “a shortage of women choosing to study these [STEM] subjects at A-level and in higher education”<sup>3</sup> as a critical issue behind the ‘disconnect’ between a strengthening demand for STEM graduates and the declining number of STEM graduates.
- 3.3 The low level of women’s participation in the study of STEM subjects at undergraduate levels decreases yet further when the uptake of higher degrees and post-graduate and post-doctoral research is considered. The academy, across all subject areas or cost-codes, has been characterised as a ‘leaky pipeline’, with women detaching at each stage. This is exacerbated within STEM subjects, particularly physical sciences, where the culture and mode of research contribute to structural barriers to women’s progression.
- 3.4 Overt discrimination is not the cause, according to work done by Athena and the ETAN Network on Women and Science, of women’s decision not to enter, or to drift away from, STEM careers. Rather, it is the perception and reality of the workplace which functions to exclude women from having, and progressing within, careers in STEM. The barriers cited in *Set Fair*, include:
- Few visible role models and mentors;
  - lack of transparency for pay and promotion procedures;
  - gender imbalance in the decision-making process;
  - slow setting-up and take-up of work life balance policies;
  - stereotyping of careers advice;
  - lack of knowledge and experience for girls and young women in non-traditional areas of work;
  - the publication record is heavily compromised by a career break or a (more senior) partner relocating to a new institution;
  - flexibility and mobility are the cornerstones for promotion;
  - women having to work harder to convince and persuade their managers that they want and need more responsibility which they see being given to their male colleagues;
  - having to work against the perceptions of what women want and what women can do<sup>4</sup>.

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<sup>3</sup> Sir Gareth Roberts (2004) *SET for Success: The Supply of People with Science, Technology, Engineering and Mathematics Skills* HM Treasury, London.

<sup>4</sup> Greenfield, S., Peters, J., Lane N., Rees, T., Samuels, G. (2002) *SET Fair: A Report on Women in Science, Engineering and Technology* Department of Trade and Industry, London.

3.5 Many of these concerns are not specific to STEM occupations, and the Women and Work Commission report *Shaping a Fairer Future* makes a number of recommendations for action that government, employers, and other stakeholders can take to address these and other causes of the pay gap. The Scottish Executive has undertaken action against the majority of the recommendations, and it would be helpful if this action could be incorporated into the Science and Innovation Strategy, where appropriate. A small selection of examples of possible overlap include:

- Revised guidance for *A Curriculum for Excellence* which reflects the principle that the curriculum is for all, with the emphasis on enabling all pupils to achieve their full potential, whatever their gender, background, interests and abilities;
- giving consideration to ways in which trainee teachers can learn to challenge gender stereotyping and promote equality in work roles;
- challenging Sector Skills Councils (SSCs) to ensure they are taking positive steps to address any imbalance in gender within Modern Apprenticeships;
- developing a self-evaluation guide, in partnership with the Equal Opportunities Commission, to complement HMIE's *How good is our school?* framework, which will provide good practice examples on mainstreaming gender equality in schools<sup>5</sup>.

3.5 Action to achieve gendered outcomes is necessary if women's lack of engagement with STEM study and occupations is to be reversed. Given the gendered nature of the skills shortages within STEM, long term aspirations and medium term action points which explicitly identified gendered outcomes would be expected within Theme 5. Ideally, gender should be mainstreamed within each specific aspiration or action point.

3.6 Close the Gap welcomes all initiatives that address gender gaps within STEM occupations, including the UK Women's Resource Centre. Gender-focused activity must, though, be mainstreamed across the Science and Innovation Strategy for Scotland if positive outcomes are to be maximised. The considerable benefits that would be returned if women were more effectively engaged in STEM include:

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<sup>5</sup> Equality Unit *Scottish Executive Action to Implement the Women and Work Commission's Recommendations* (available at <http://www.scotland.gov.uk/Publications/2006/11/10143725/8>)

- **Competitiveness** – Scotland needs to engage the best people in the pursuit of innovation in STEM.
- **Return on investment** – the cost of training people in STEM is high. As many qualified people in the workforce should be retained as possible.
- **Benefit to science** – maximising diversity enhances the quality of STEM research and development carried out.
- **Missed markets and skills** – companies are losing out on markets and may be missing out on benefits of STEM research and its application, when women are not represented in the design and development of policies and products<sup>6</sup>.

3.7 Research and development conducted by homogenous groups of workers seems more likely to bring to market products that are unattractive or risky to other groups of consumers. Examples of this are “male” crash test-dummies being used to test the first generation of airbags, to the mortal detriment of women and children whose different physiologies rendered them vulnerable to unforeseen injury; artificial heart valves being developed and produced that were wrongly sized for women’s hearts; and early voice recognition software that was calibrated to men’s voices<sup>7</sup>. Heterogeneity in R&D teams is likely to yield products that address a wider variety of need, and, concomitantly, more likely to succeed in the marketplace.

3.8 Any Science and Innovation Strategy for Scotland must take cognisance of the business, social and scientific benefits of women’s increased participation in STEM. Action therefore must be included that offers incentives to employers, funders, and other stakeholders to address the barriers preventing women’s full engagement with STEM.

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<sup>6</sup> Adapted from Greenfield, S., Peters, J., Lane N., Rees, T., Samuels, G. (2002) *SET Fair: A Report on Women in Science, Engineering and Technology* Department of Trade and Industry, London.

<sup>7</sup> Adapted from examples given in Margolis, J and A Fisher (2002) *Unlocking the Clubhouse: Women in Computing* MIT, Cambridge.