

ATHENA PROJECT



**Report to the UK Research Councils and the Wellcome Trust
Sanger Institute on the 2004 Athena Survey of Science
Engineering and Technology (ASSET)**

December 2005

Report 27

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Report to the UK Research Councils and Wellcome Trust Sanger Institute on the 2004 Athena Survey of Science Engineering and Technology (ASSET)

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FOREWORD

I am delighted to present the findings from the Athena Survey of Science Engineering and Technology (ASSET). This survey of the views and experiences of research council staff represents Athena's first initiative outside higher education. I hope that it will form the basis for a continuing partnership to improve the representation of women at senior levels.

As our report makes clear there are differences between the research council and higher education sectors. However, as the perceptions and realities of career progression for the men and women who took part in ASSET indicate the differences between men and women are far more important than the differences between the sectors.

The findings suggest that the research councils, like UK universities, need to do more to encourage, support and ensure that women take a full part in departmental and professional life, that their contribution is valued, recognised and rewarded, so that women now in early and mid career are able to look forward with confidence to an enjoyable and sustainable career in science.

The findings also demonstrate that the good practice approaches, interventions and measures of progress that Athena has developed in its work with universities are also appropriate for research institutions. Athena's work has shown that whereas good practice benefits all, men and women, staff and students alike, and the quality of the science that results, bad practice is incrementally more prejudicial to the career progression of women, and those with care responsibilities, with non traditional backgrounds and / or career paths.

In the best universities, research institutions, and departments there is good practice. Many of the changes in practices and procedures that have been successfully introduced were not expensive, but required understanding, planning and energy to introduce. Vigilance and monitoring is essential to ensure their continuing effectiveness. Good practice benefits both men and women.

I hope that the research councils will pick up the challenge that this report represents and will work with Athena to make use of Athena's learning from higher education. I look forward to hearing from the research councils on the progress they are making.

Nancy Lane
Chair, Athena Project

December 2005

THE ATHENA PROJECT

The aims of the Athena Project are 'the advancement of women in science engineering and technology in higher education and research and a significant increase in the number of women recruited to the top posts.' Athena's aims are based on the beliefs that:

The advancement of science, engineering and technology (SET) is fundamental to quality of life across the globe

It is vitally important that women are adequately represented in what has traditionally been, and is still, a male-dominated area

Science cannot reach its full potential unless it can benefit from the talents of the whole population, and until women and men can benefit equally from the opportunities it provides

Since Athena's establishment in 1999, the focus of its work in higher education has been practical and positive – to encourage, develop, disseminate, and embed good practice. Reports on Athena's work, good practice guides, case studies and findings from ASSET 2003 are available on the Athena website www.athenaproject.org.uk

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RCUK and the research councils

The research institutions and the scientists who participated

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Report to the UK Research Councils and Wellcome Trust Sanger Institute on the 2004 Athena Survey of Science Engineering and Technology (ASSET)

INTRODUCTION

The report is written for a wide audience – the chief executives of the research councils, the institute and unit directors, the senior managers, who are responsible for developing action agendas to improve the representation of women in science, engineering and technology (SET) the leaders of research groups and senior scientists who influence and perpetuate the culture of their departments and research laboratories, and for women scientists at all stages of their careers.

This report focuses on the 2,422 research scientists (1,474 men and 970 women) who took part in the Athena survey of science, engineering and technology (ASSET) in autumn 2004. It refers to comparable data for higher education (HE)¹ and flags the issues for the research institutions (RI) to address.

This report just touches the surface of a wealth of data that has yet to be fully explored.

The survey attracted responses from 2,422 male and female scientists working for the:

- Biotechnology and Biological Sciences Research Council
- Council for the Central Laboratory of the Research Councils
- Medical Research Council
- Natural Environment Research Council
- Wellcome Trust Sanger Institute

All the participating organisations made a commitment to use the results of ASSET to work towards the achievements of Athena's aims, and to:

1. measure their progress and the compare their position against others
2. contribute to the development of their action agenda
3. raise awareness of career progression issues for women and men in science
4. inform the science community, heads of research groups and departments
5. report to senior managers, governing bodies and equal opportunities committees and to recommend action for improvement

Work in higher education (HE) by the Athena Project since its establishment in 1999 had shown that, at organisational level, there was a need for hard information, to engage the attention of directors, senior managers, and senior scientists and against which they could compare their institution's progress. However, the small surveys undertaken by individual universities in early work for Athena had not been cost effective. Numbers were small and the results could only be read-across to other institutions with caution. Where women were in small numbers and individuals were potentially identifiable, there was a degree of caution in replying to internal surveys. ASSET offered a UK survey, which required relatively little effort and low direct costs for the participating organisations.

¹ In 2003 twenty three universities (2,172 academics) took part in the ASSET pilot survey Athena Report 26 - the findings from this survey is available on www.athenaproject.org.uk. A further seventeen universities took part in the 2004 alongside the five research organisations. The paper, *UK ASSETS: 6,500 plus UK scientists can't be wrong - the Athena surveys* which drew on findings from both surveys was presented at the American Association for the Advancement of Science Meeting in Washington in February 2005 and is also available on the Athena website.

ASSET provided the opportunity to explore how those at the top got there, their views on what helped en route, and what was important for those on their way up. The areas covered by ASSET were those where employers have control and where changes can make a difference to, and improve the representation and progression of women in science careers.

ASSET explored areas which Athena's work in HE had identified as important to career progression and where there were apparent differences in men's and women's career progression. This report covers participants':

- activities – those which may influence their career progression, their research, their committee memberships and management responsibilities and their external professional contributions

- career aspirations, expectations and the career development opportunities available

- perceptions and experiences of the practices and processes that can act as a barrier to the advancement of women in science

The Athena Project hopes that the findings and insights that result from this report will justify the time taken by the scientists who contributed to it, and that they, their colleagues and the UK science research community will make good use of the results to inform, develop and support good practice in research employment.

EXECUTIVE SUMMARY

The evidence from the analysis of the responses of 2,000 plus scientists from the research institutions (RI), who took part in ASSET, on their experiences and perceptions of career progression, provides the research councils with a basis on which to move forward, to open up a debate with their constituent units, institutes and laboratories, and to take positive steps, at policy and practical levels, to improve women's representation in science.

The report highlights the differences between women's and men's progress in and enjoyment of their careers, and their rewards. The problem is not the women scientists, the problem is why science and research, the way they are organised, and their work ethos and culture fail to retain, and or actively deter the women who were initially attracted to them as a career. However, women scientists cannot not be excluded from the solution; they must be engaged in its planning and implementation. Using this report and the questions that it raises as the basis for an informed discussion of the issues with senior managers and scientists and women at all career stages is key to the definition of workable practical strategies for the removal of the structural and individual barriers to equitable career progression. The findings from ASSET:

- point up the organisational processes and practices, changes to which could make a difference to women's career progression, to women's visibility and to ensure that the satisfaction, recognition and rewards that women receive match their contributions

- provide evidence to persuade senior managers of the existence of barriers, both structural and individual, to women's career progression

- should help councils to identify priorities for action

- will allow councils to compare themselves against the UK position and will provide benchmarks against which organisations can measure themselves and their progress

- suggest that much needs to be done before women perceive themselves to have the same level of support, encouragement, development opportunities and recognition as their male colleagues

The issues flagged by ASSET are not unique to the UK. Throughout Europe for women in SET 'the higher, the fewer and the more lonely' remains the norm, but is not one that science and UK plc can afford to continue. It is clear that:

- Increasing the supply of well-qualified entrants to careers in RIs does not, on its own, solve the problem, if many of the women then either get stuck at the bottom of the career ladder or leave, while their male colleagues are encouraged to 'go for it'.

- Women are as ambitious as men, they are as scientifically active, but they do not make it to the top in the numbers that reflect their contributions to science. If they do get to the top, they still feel they are less valued than their male colleagues and that women in general are disadvantaged in terms of salary, promotion, visibility and access to career development.

Much of what is needed is for units, departments and research groups to organise and to influence. Many of the changes that have been successfully introduced in university science departments were not expensive, but required understanding and planning. In retrospect, and to those who made them, the changes now seem simple and just common sense, they are 'how we do things round here' but, for them 'the really big problems still need to be tackled'.

However, departments and units cannot succeed on their own; they need support from the corporate/organisational level and the right framework of equitable policies and processes within which to work. The corporate level needs to be clear as to its expectations and to have in place effective and transparent reporting and feedback mechanisms which will ensure that change is happening on the ground.

Athena's work has shown that successful programmes for change cannot function in isolation and if they are to be sustained they need to involve and engage the people that hold the keys:

The senior managers – who need to examine organisational policies and processes, to respond to qualitative and quantitative evidence and listen to the views and voices of women and men in their science community

The heads of science departments and units – whose role in the implementation of corporate policies is critical, and who need to support and develop their staff at all levels, so that UK science does not lose their scarce and hard won talents

The women scientists– who should expect, and demand, more support and guidance from their departments and managers, and who need take responsibility for their career development, and to understand and engage in policy development

Below are some key themes from the report. They raise yet more questions. Finding the ultimate answers could take significant time and energy, and might perhaps be less rewarding than taking action on the messages that come out loud and clear.

KEY THEMES

In the survey, women were significantly under represented at senior levels and in the older age bands they were more likely to be on short term contracts. Less of the women had children, they were less likely than the men to have worked outside RI, and for those who had entered RI at scientist level more of them had remained at that level.

SUPPORT ENCOURAGEMENT AND DEVELOPMENT OPPORTUNITIES

The correlation between encouragement and success (Section 2.6) appears high. The successful were given encouragement and for them there does not seem to be any difficulty in recognising encouragement, when it is given. The question is whether encouragement is often enough given.

Women were much less aware than men of the career development opportunities available to them and their take up of what was offered was lower (section 4.5).

By comparison with HE, mentoring scored more highly for both men and women in RI in terms of what was important for their career progression, and mentoring as a help to returning after a career break scored highly for men and women (Section 2.4). However, 52% of women (men 33%) were not aware of formal mentoring being available to them, and overall only 6% of women (men 8%) had participated (Section 4.5).

Women's responses (Section 6.1) on the support they received from senior colleagues and their line managers compare unfavourably with men's and, except at director level, did not feel that they were encouraged to undertake activities which would contribute to their career development (Section 6.2).

APPOINTMENT AND PROMOTION

Many junior women (Section 2.5) and to a slightly lesser extent men, know nothing about the procedure or criteria for promotion.

The percentage of women appointed by all male appointments committees (Section 2.3) is much lower than for men. The percentage of women appointed recently by all male committees is lower than in the past when such committees were more common.

Women clearly perceived that they are disadvantaged in terms of promotion (Section 6.2)

DECISION MAKING, RESPONSIBILITIES AND VISIBILITY

Internally - at principal scientist level more men represented their centre/council at specialist meetings and were selected to manage special projects. At senior scientist level higher percentages of women were involved with staff supervision and training, project management and external research collaboration. (Section 3.)

Externally - at senior scientist and scientist level higher percentages of men had been speakers at conferences, at the two senior levels a higher percentage of women were speakers. At principal scientist level a higher percentage of men were editors of academic journals. (Section 3)

As an important contributor to a good work life balance, more women with children rated meetings finishing on time than did men with children, reflecting the fact that higher percentages of female parents identified themselves as the main carer. (Section 5.2)

Only at director level did women feel their administrative contribution was valued, and higher percentages of women, at all levels, perceived women to be disadvantaged in terms of their visibility to senior management. (Section 6)

RESEARCH

Research performance was seen by men and women as key to career success. (Section 4)

Women at principal and senior scientist level were more likely than men to be members of interdisciplinary, departmental and international research groups. At senior scientist level, women were more likely to be responsible for external research collaboration. (Section 3)

Women at principal and senior scientist level were less likely than men to feel that their research contribution was valued. (Section 6.1)

FLEXIBLE WORKING

In terms of reasons given for choosing to work in RI, flexible hours were rated much lower than in HE by both women and men. And, as a help in returning after a career break, flexible working scored much lower than mentoring for both men and women, and much lower than it did for HE. (Section 2)

Flexible hours were rated highest overall, for women and men with children, from the list of what were the most important contributors to a good work life balance. Flexible working came highest in the list of 'facilities' which were available to respondents, ranging from the 85% of directors who had this to 64% of the scientists. (Section 5)

SATISFACTION RECOGNITION AND REWARD

Women were younger than men at all levels and at all ages men's average salaries were higher than women's. (Section 1)

Women clearly perceived that they were disadvantaged in terms of pay and although women and men at director level felt their successes were celebrated, their junior colleagues did not feel that their successes were not celebrated (Section 6.1)

THE WAY FORWARD

Starting from the Government's vision for science - *The UK knowledge driven economy benefits from the inclusion of the talents of the whole population and women and men shall equally benefit from the opportunities afforded by it* - at international level the UK needs to attract the world's top scientists to its centres of scientific excellence.

At national level the challenge is to enable the government, the HE funding and research councils to:

- better understand the career paths of their scientists
- make more effective use of the science skills of the country's graduate and postgraduate output
- develop strategies to attract into and retain more women (and men) in scientific careers

For the research councils at the organisational level the task is to:

- open up discussion of the key questions identified by ASSET findings
- identify practical steps to ensure equality of treatment, encouragement and progression and to fulfil each scientist's potential and maximise their contribution
- introduce develop and disseminate good practice so that they can promote research institute employment as an attractive and sustainable career option for women

For individuals it is important to emphasise the responsibility of scientist at all levels to:

- take their management skills seriously
- take responsibility for their own careers and the careers of their supporting staff
- support those early in their careers in making informed career decisions be it to go or to stay
- to value the contribution of all to the success of their departments science

ACTION FOR THE RESEARCH COUNCILS

To move this agenda forward all the research councils might consider adopting Athena's targets:

Short term: the percentage of female applicants for posts to reflect the percentage of women at the level immediately below (in their own institution and/or the 'pool' of institutions where they usually recruit)

Medium term: the percentage of newly appointed / newly promoted women in posts to reflect the percentages at the level below

Long term: the percentage of women at each career level to reflect the percentage at the level below (including the organisation's graduate or equivalent intake)

The research councils might also consider adopting/adapting Athena's checklists for universities and departments and benchmarks and key performance indicators for use and reporting by their institutes, units and departments:

Athena benchmarks for

- career development activities, mentoring and networking
- appointment and promotion processes
- organisational and cultural change both institutional and departmental

Athena departmental key performance indicators (developed with the Royal Society of Chemistry) for:

- departmental appointment processes
- departmental career progression arrangements
- departmental organisation and arrangements

are included in the 'Athena Swan Charter Introduction to Good Practice' which also includes information on the good practice developed by UK universities and their SET departments. The Charter scheme for recognising excellence in SET employment in UK universities was launched in June 2005. Further measurement tools based on ASSET and work in Charter member universities will be developed in 2006.

What is clear from Athena's work in higher education is that whereas good practice benefits all – men and women, staff and students alike and the quality of the science that results – bad practice is incrementally prejudicial to the career progression of women and those with caring responsibilities.

ACTION FOR ATHENA

The Athena Project will continue to identify further benchmarks and indicators in support of the Athena Swan Charter, its recognition scheme for excellence in SET employment in HE.

Athena will also continue its work to identify, encourage and develop good practice approaches, initiatives and ways to measure progress which:

- challenge the culture and values of science and engineering, university and research organisations
- recognise and celebrated the contribution of women to science and to research
- engage principal investigators, leaders of research groups and others, whose support and understanding, or the lack of it, is critical to women's career progression

In 2006 the Athena Project will publish 'key fact sheets' on the issues raised in this report, linking good practice interventions to the findings. In the meantime, Athena hopes this report will raise awareness, inform and encourage a debate among the research community on the differences between men's and women's career progression in science and on effective ways to address the significant under representation of women at senior levels. Athena looks forward to working with the research councils, RCUK, the Wellcome Trust and the UK Resource Centre for Women in SET to make best use of the findings from ASSET.

THE STRUCTURE OF THE REPORT

Section 1 The survey participants

The section describes the organisations and scientists who took part in the survey, the career levels used in the analysis, the respondents' career level, type of appointment and contract and their personal characteristics.

Section 2 Career progression

This section covers respondents career progression, why they had chosen to work in a research institute and the other sectors of science employment in which they had worked, the level at which they had entered a research institute, their selection process, returning after career breaks, respondents' awareness of promotion procedures and criteria, and the encouragement they had been given to progress to senior level appointments.

Section 3 Respondents activities

The section includes what respondents did in terms of their research activity, their internal responsibilities, committee experience, and external professional activities, including consultancy and conference participation.

Section 4 Ambitions and perceptions

The section reviews respondents' career ambitions, their current aspirations, whether they wished to continue their career in their current organisation, their perceived personal development needs, the career development opportunities available to them in their organisation, and their view of what mattered for a successful research career.

Section 5 Work life balance

The section includes respondents' views of their organisation's approach to work life balance, what were the most important contributors to a work life balance and which of them were available or in operation in their organisation, and their views on the travel requirements of their job.

Section 6 Perceptions of Equality and Opportunity

The section explores respondents' experiences of the support, opportunities, and encouragement they received from their own organisation, and their perceptions of the equality of treatment of men and women in their organisation.

Note

Tables and figures supporting the report are contained in a separate Statistical Annex (where they appear in the order to which they are referred in the report) a PDF of the report and the statistics is available on www.athenaproject.org.uk

THE SURVEY

The questionnaire, developed for the pilot survey of twenty three universities in spring 2003, was adapted by the Athena Project and the UEA survey office, in consultation with the research councils, to enable comparisons to be made with higher education. Additional questions were included at the request of the participating research councils.

The introduction to the questionnaire included a statement that the survey results would be used nationally and locally to identify and disseminate good practice, to contribute to the development of the SET action agenda and to raise awareness of career progression issues for women and men in SET. A guarantee was given that the data collected in the survey would be held anonymously and securely.

The web survey took approximately twenty minutes to complete.

It opened with a section on the respondent's current job, contract type and subject area.

This was followed by questions on the respondent's work history, and activities (department, organisational and external) in their current appointment.

The final section covered career aspirations and expectations, linked with perceptions on career progression, the value placed on their contributions by their colleagues and their department and the equality of treatment in their department.

The web survey tool used for ASSET was developed by Bristol University human resources department with the University's Institute of Learning and Research Technology, originally for their UK Contract Research On-line Survey (CROS).

The key features of the survey tool were on-line access for organisations to their own results (but not to the free text comments), and no hardware, software or training costs for the participating organisations, as no technical know-how was needed at local level to get the survey up and running.

The distribution of information on the survey, the questionnaire, and subsequent reminders was by e-mail from respondents' research institution. ASSET relied on local contacts to identify and contact eligible staff.

THE REPORT

1. THE SURVEY PARTICIPANTS

1.1 PARTICIPATING ORGANISATIONS

The survey questionnaire was completed by 2,422 research staff, 970 women (40%) and 1,474 men (60%) working for:

Biotechnology and Biological Sciences Research Council (BBSRC) - 716 respondents (women 46%)

Council for the Central Laboratory of the Research Councils (CCLRC) - 488 respondents (women 16%)

Medical Research Council (MRC) - 870 respondents (women 50%)

Natural Environment Research Council (NERC) -270 respondents (women 33%)

The Wellcome Trust Sanger Institute, -100 respondents (women 38%)

Participant organisations number and gender of respondents- Table 1

1.2 THE SURVEY POPULATION

Within the participating organisations the survey population was self-selecting. Women represented 40% of respondents, with considerable variations across organisations, subjects and grades.

Across the four research councils a total of 6,852 scientists (2376 women and 4476 men) were eligible to take part, of these 932 women and 1,412 men completed the questionnaire. Overall 34% of eligible staff participated, 40% of the eligible women (men 32%). In one, where women were in a significant minority, 55% of them contributed to the survey.

Overall, the 6,500 plus scientists who participated in the 2003 and 2004 ASSET surveys were divided roughly 2:1 between higher education (HE) and research institutions (RI).

Respondents by organisation type- Figure 1

1.3 RESPONDENTS CAREER LEVEL

For the purpose of the survey four main career levels were identified:

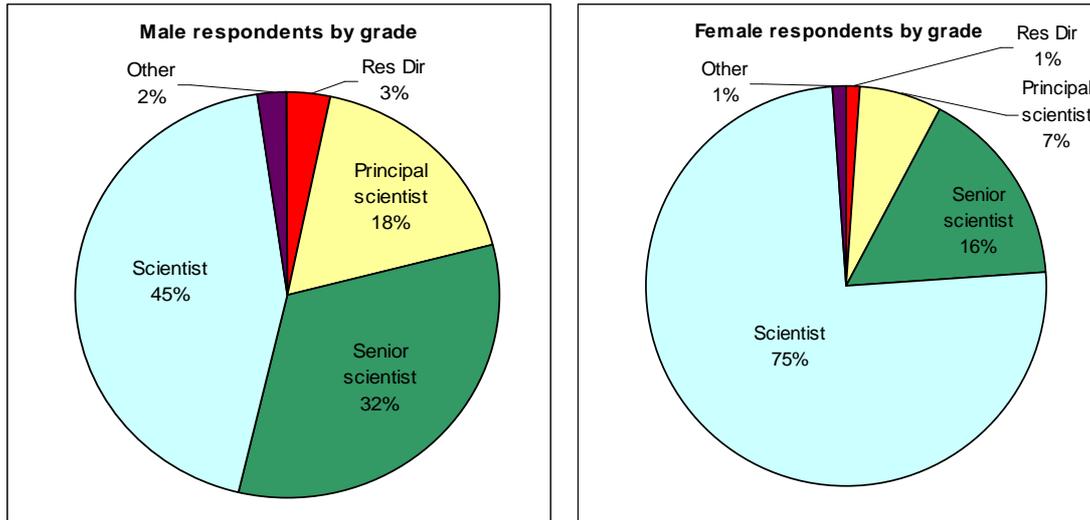
Research Director - Scientist or engineer who directs others and is responsible for the strategic planning/policy for wide area. Will manage significant budgets, resources and facilities. Will typically head up a research centre or research division.

Principal Scientist - Scientist or engineer who leads and is responsible for a specific research programme. Will typically manage staff, facilities, service function, resources, budget for own area / a number of different programmes or service functions.

Senior Scientist - Scientist or engineer with responsibility for discrete projects within larger team/programme of research. May be responsible for more junior staff. Also includes senior support staff such as managers of research functions.

Scientist - Typically a scientist or engineer in early post-doctoral position. Manages their own activity, normally as part of a team. Reports to a senior scientist or other first line supervisor. May be in equivalent research support position.

The 44 respondents (34 men and 10 women) who did not fit into these main grades were categorised 'Other' (2%). After the survey closed the research councils reviewed those who had designated themselves as 'Other', and where appropriate reassigned them to one of the four main career levels.



The representation of women at each level varied between councils:

Director	women represented between 1% to 4% of Directors in the survey
Principal scientist	women represented from 3% to 9% of principal scientists in the survey
Senior scientist	women represented from 12% to 27% of senior scientists in the survey
Scientist	women represented from 57% to 81% of scientists in the survey

The representation also varied across the career levels:

- The 59 **directors** who responded represented 2.4% of the survey population
 - The 11 women (19% of the directors in the survey) represented 1% of female respondents
 - The 48 men represented 3% of male respondents.
- The 328 **principal scientists** represented 13% of the survey population
 - The 65 women (7% of the principal scientists in the survey) represented 18% of female respondents
 - The 263 men represented 18% of male respondents
- The 633 **senior scientists** represented 26% of the survey population
 - The 155 women (16% of the senior scientists in the survey) represented 7% of female respondents
 - The 478 men represented 32.4% of male respondents
- The 1380 **scientists** represented 56.5% of the survey population
 - The 729 women (53% of the scientists in the survey) represented 75% of female respondents
 - The 652 men represented 44% of male respondents

Respondents by career level and gender- Table 2

1.4 RESPONDENTS CONTRACT TYPES

The majority of respondents at scientist level (62%) were on permanent contracts. This differed from HE, where the transition from a post-doctoral/contract research post to a lectureship is one of the key stages in an academic career, and brings with it for the majority a transition from fixed term appointments to a permanent or indefinite contract.

94% of respondents were in full time employment. Of the 136 in part time employment 26% worked 50% of full time, or less, and 74% worked more than 50% of full time hours.

74% of respondents were on permanent contracts. There were differences across the research councils. In one 97% of respondents were on permanent contracts, and in another 59% of respondents were 'permanent'. The council with the highest percentage of respondents on 'permanent' contracts had no female respondents on short term contracts. Across the other three research councils, the range for women on short term contracts was from 13% to 41% (men 5% to 36%).

Respondents by contract type- Table 3

1.5 RESPONDENTS SUBJECT AREA

Participants were asked to give the subject of their highest degree or qualification. The biological scientists were in the majority, with 49% of all respondents, and had the highest proportion of women. The other disciplines were dominated by men:

Biological sciences	1196 respondents, women 48%
Physical sciences	496 respondents, women 26%
Engineering	191 respondents, women 12%
Mathematical and computer sciences	159 respondents, women 30%

**Respondents by subject area and career level- Table 4
Subject areas Research and HE- Figure 2**

1.6 RESPONDENTS AGE PROFILE

At all levels the women in the survey were younger than the men, and by comparison with HE, there were lower percentages in the 35 to 50 and 50 plus age bands:

age 35 or younger	48% of women (men 31%) range across research councils women 40% to 54%, men 20% to 36%
age 35 to 50	40% of women (men 45%) range across research councils women 33% to 48%, men 43% to 53%
50 plus age group	women 12% (men 24%) range across research councils women 5% to 14%, men 23% to 29%

**Respondents by age and gender and Mean age by grade and sex- Table 5
Age profile Research and HE by gender- Figure 3**

1.7 RESPONDENTS ETHNICITY AND NATIONALITY

White, UK nationals predominated in the survey. UK nationals represented 76% overall, women 73% (men 78%). The range across the research councils was from 68% to 85%. 87% of the survey population was white, and for the research councils the range for non white respondents was between 1% and 12%.

Respondents by nationality, ethnicity and gender- Table 6

1.8 AVERAGE SALARIES

Respondents were asked about their pay on a FTE basis. For the survey population overall (HE and Research) there was a 6% differential, after regression runs controlling for age, grade and subject area. This compares with a UK overall difference of 19% between men's and women's pay.

In all the age bands men's average salaries were higher than women's. In the 26 to 30 age band women's average salaries were 95% of men's. The difference became more marked between ages 30 to 50. In the 46 to 50 age band women's average salaries were 81% of men's average, falling to 74% in the 56 to 60 age band.

Salary by age band and gender- Table 7

2 CAREER PROGRESSION

2.1 WHERE WORKED AND CHOOSING TO WORK IN RESEARCH INSTITUTES

The majority of respondents had worked in at least two of the three sectors - research institutes, higher education, and industry. A higher proportions of women (38%) than (men 29%) had worked only in research institutes.

Where respondents had worked by gender- Table 8

There was little difference between the reasons given by men and women for why they had chosen to work in research institutes, rather than in HE or industry. However, there were some differences between the reasons given by research institute (RI) and HE respondents:

RI respondents put 'research area' first (women 23%, men 27%). This choice came second in HE (women 21%, men 28%)

'Academic freedom' was ranked top by HE respondents (women 29%, men 43%), and was ranked second by RI respondents, but little different from 'better facilities/funding for research', and 'better working conditions'

'more flexible hours' which was ranked fourth in HE (women and men 21%), ranked eleventh in RI (women and men 9%)

Reasons for working in their chosen sector Research and HE by gender- Table 9

2.2 GETTING INTO RESEARCH

In HE the transition from a post-doctoral/contract research post to a lectureship is one of the key stages in an academic career, and brings with it, for the majority, a change of employer. In RI there does not seem to be the same career barrier between the scientist and senior scientist levels. Overall only 25% moved to gain their first senior scientist post, although women (at 18%) were less likely to move than men (29%). For comparison in HE 59% of women (men 60%) moved to obtain their first lecturer post.

Moved to new employer for first post at higher level by level and gender RI and HE- Figure 4

Of those who responded to the question on the level at which they entered RI employment, there was little difference between men and women. 65% women (men 64%) entered at scientist level. A slightly higher percentage of women (32%) entered via 'other' posts (men 27%). There was little difference between the number of applications made by men and women for their first post in RI at any of the levels.

A comparison was made between the level of respondents' first post in RI and their current level. Of the 626 women who entered RI employment as scientists, 73% are currently still at that level. By comparison, of the 926 men who entered as scientists, 44% are currently still at that level.

Number of applications for 1st post and level of 1st post by level and gender - Table 10

2.3 SELECTION AND INTERVIEWS

The percentage of respondents who had not been interviewed for their current post did not change significantly over time. At scientist level, of those appointed in the last two years 7% had not been interviewed, at senior scientist level 11% had not been interviewed.

Interviewed or not for current appointment by level- Table 11

The survey showed differences in women and men's experiences of the all male selection panel. Of the 190 respondents appointed to senior scientist posts in the previous two years 30% of the women (men 42%) had been interviewed by an all male panel.

The picture was not dissimilar in HE, where 25% of the women (men 33%) appointed to lecturer posts in the previous two years had been appointed by all male panels. At scientist level (270 appointments) 30% of women (men 36%) had been interviewed by all male panels.

The percentages of men and women appointed by all male panels more than five years ago were similar, women 55% (men 46%). However, the picture changes as the percentage of respondents appointed by all male panels reduces, and of those appointed in the previous year 23% of women (men 43%) were appointed by all male panels.

**All male selection panel by level and by gender for appointments in previous two years
Make up of interview panels by number of years since interview
Table 12**

2.4 CHILDREN AND CAREER BREAKS

In RI male/female percentages of respondents with children aged ≤ 16 were 35:28 and in HE 40:36.

Respondents with children by gender- Table 13

More women (32%) than men (4%) in the survey had taken career breaks. A higher proportion of women (29%) than men (14%) reported that they had experienced difficulties in returning to work.

Career breaks and difficulties in returning RI and HE by gender- Table 14

Those who had taken career breaks were asked what would have helped their return:

Mentoring came top for 84% of women, and second for men at 31%

Peer networks came top for men at 44% (women 57%)

For women, peer networks came after contact with department at 78% (men 26%) and shorter hours women 66% (men 23%)

In HE mentoring for women (at 28%) came below flexible working (81%), and child care (77%).

What would help transition back to work RI and HE by gender- Table 15

2.5 AWARENESS OF PROMOTION CRITERIA AND PROCEDURE

Overall, 34% of women (men 54%) said they had good or fairly good knowledge of promotion criteria. 35% of women (men 54%) said they had good or fairly good knowledge of promotion procedure.

Knowledge of promotion criteria and procedure by level and gender- Table 16

At scientist level there were significant differences between the 31% of women who had no knowledge of the criteria for promotion and men (27%) and between the 36% of women (men 30%) who had no knowledge of the promotion procedure. This was similar to HE, where 39% of women (men 35%) at post-doctoral level had no knowledge of the criteria and 50% of women (men 43%) had no knowledge of the process.

Junior scientists - no knowledge of promotion criteria and procedure by gender RI and HE-Table 17

2.6 ENCOURAGEMENT TO APPLY FOR SENIOR POSTS

There were differences in the proportions of women and men who had received invitations or encouragement to apply for more senior posts. At senior scientist level 28% of men and 16% of women had been encouraged to apply for a principal scientist post.

There were differences across the councils. In one council of the 106 senior scientist respondents 6% of the women (men 23%) had received encouragement to apply for principal scientist posts. In another, of the 64 scientists who responded, 32% of the women (men 42%) had been so encouraged.

However, those who had made it to principal scientist level reported similar levels of encouragement, women 62% (men 60%) to get to their current level. A high percentage of directors also reported they had been encouraged to apply for director level posts 71% of women (men 81%).

Encouragement to apply for senior appointments by level and gender-Table 18

3. RESPONDENTS ACTIVITIES

3.1 RESEARCH

In terms of their membership of departmental research groups, interdisciplinary and international research groups there were differences between female and male respondents:

interdisciplinary research group	
principal scientist	60% of women (men 47%) were members *
senior scientist	36% of women (men 32%) were members
departmental research group	
principal scientist	72% of women (men 63%) were members
senior scientist	53% of women (men 43%) were members *
international research group	
principal scientist	54% of women (men 51%) were members
senior scientist	37% of women (men 31%) were members *

* denotes significant difference

Research activity by level and gender-Table 19

3.2 RESPONSIBILITIES

Respondents were asked about a range of responsibilities they held or had held (the list was arranged in alphabetical order, including at the end 'none of the above'). The most frequently identified responsibility was student supervision, where there was little difference between men and women. However, below that there were significant statistical differences between male and female respondents:

	Prin Sc.	Snr Sc.	Scientist
Staff supervision and training		F>M	F>M
Project management		F>M	F>M
Line management			M>F
External research collaboration		F>M	
Safety responsibility/management			M>F
Sign offs		M>F	M>F
Centre/council rep at specialist meetings	M>F		M>F
Selected to manage special project	M>F		
External client/customer consultancy		M>F	M>F
Due diligence		M>F	M>F

Responsibilities by level and gender-Table 20

3.3 COMMITTEES

Committee chairs were usually 'directors', principal scientists also undertook this, but in smaller number. 14% of the women (men 25%) principal scientists chaired departmental meetings.

At principal scientist level there was a significant difference between the 82% of women and the 68% of men who took part in appointments committees for their own area. A higher, but not significantly higher, percentage of men at this level (39%) chaired appointment panels (women 28%)

Respondents were asked if they were currently a member of any internal committees. There was little difference between male and female participation in internal committees, and most committees were mixed, with only 16% of respondents reporting membership of all male committees.

The majority of committees met in normal working time (82%) or mainly in working time (15%).

Committee membership by level and gender-Table 21
Current membership of internal committees by level and gender-Table 22
Committee gender balance and timing of meetings-Table 23

3.4 CONSULTANCY

Men were more likely than women to have undertaken professional consultancy. However, the only level at which the difference between men and women was significant was the scientist level, where few respondents undertook consultancy.

Consultancy by gender and level and by subject area-Table 24

3.5 CONFERENCES

At principal scientist level women (69%) were more likely than men (59%) to have been a specialist/breakout session speaker, to have chaired a session women 66% (men 56%), or to have been a keynote or plenary speaker women 58% (men 51%). However these differences were not statistically significant.

At senior scientist and scientist levels the position was reversed, and there were significant differences between the 43% of women senior scientists and 34% of men who had undertaken none of the specified roles. At scientist level there was a significant difference between the 7% of women and the 11% of men who had been specialist break-out speakers.

Conference activity by level and gender and in RI and HE-Table 25

3.6 OTHER EXTERNAL ACTIVITIES

Respondents were asked about a range of external activities. At principal scientist level 43% of women (men 44%) were members of the editorial boards for an academic journal, however significantly fewer women (6%) than men (19%) were or had been editors of a journal.

Other external activities by level and gender-Table 26

4. AMBITIONS AND PERCEPTIONS

4.1 CAREER AMBITIONS

Women at scientist level appeared not to be aiming as high as their male colleagues. In terms of stated ambition, as in HE, men appeared to identify their aims at an earlier stage. However, at senior scientist level this difference had all but disappeared, except for the percentage of women with ambitions to become a research director which was half that for men. And, at principal scientist level women's ambitions were higher than their male colleagues. Differences by gender between the research councils reflect their differing staff grade profiles,

**Career ambitions by gender
Career ambitions by level and gender
Ambitions - scientists
Table 27**

4.2 CURRENT ASPIRATIONS

The majority of women and men at all levels were committed to a future in RI and were not considering a move to HE or industry, The percentage of women considering a move was rather lower than men's

Current aspirations by level and gender-Table 28

4.3 WISH TO CONTINUE CAREER IN CURRENT ORGANISATION

Overall women and men wished to continue their career at their current institution.

Wish to continue career at current institution by level and gender-Table 29

4.4 PERSONAL DEVELOPMENT NEEDS

Participants were asked to select, from a list of fifteen, all the personal development activities which would help them to progress their own careers.

The only significant difference was on research performance, the factor which rated top overall chosen by 52% of the women (men 48%)

Below that there were some differences between women's and men's responses

45% of women chose 'appraisal and personal development' (men 38%)

44% of women and men chose 'management and supervisory skills'

44% of men also chose 'leadership skills' compared with 39% of women

45% of women (men 36%) chose personal development

Personal development needs-Table 30

The comparison between the responses from RI principal and senior scientists with those of their 'equivalents' in HE (readers, senior lecturers and lecturers) also showed some differences:

Research performance was rated top in both but by a more significant percentage in HE, by 72% of HE women (RI women 54%) and by 73% of HE men (RI men 52%)

'Management and supervisory skills' were rated third and rather lower in HE by 32% women (RI women 49% and by HE men 25% (RI men 46%).

Personal development needs of senior and principal scientists by gender with HE equivalents-Figure 5

4.5 CAREER DEVELOPMENT AVAILABILITY AND PARTICIPATION

The differences in the responses of women and men on the availability of training, and their participation in what was available were statistically significant for all four areas:

management and supervisory skills

71% of women (men 80%) said was available, 24% of women did not know (men 14%)
32% of women (men 50%) had participated

communication skills

67% of women (men 78%) said was available, 29% of women did not know (men 17%)
27% of women (men 35%) had participated

personal development

64% of women (men 74%) said was available, 29% of women did not know (men 19%)
41% of women (men 51%) had participated

formal mentoring

17% of women (men 33%) said was available, 52% of women did not know (men 37%)
6% of women (men 8%) had participated

The availability and take up of career development varied across the research councils and there was a relationship between them and the percentage of respondents on indefinite contracts.

Overall 77% of respondents reported that management and supervisory skills training was available, and 56% had participated.

The range of reported availability was from 91%, in a council with 93% of respondents on indefinite contracts, to 65% in a council with 59% on indefinite contracts.

And, take up ranged from 57% in a council with 98% respondents on indefinite contracts, to 26% in a council with 59% of respondents on indefinite contracts.

The relationship is similar for the other three areas:

communication skills

overall 74% said available, range across research councils 87% to 63%
overall 32% participation, range across research councils 43% to 22%

personal development training

overall 70% said available, range across research councils 84% to 61%
overall 48% participation, range across research councils 67% to 38%

formal mentoring scheme

overall 26% said available, range across research councils 73% to 10%
overall 7% participation, range across research councils 11% to 5%

Availability of and participation in career development by gender- Table 31

In terms of the usefulness of the training reported by participants who had taken it up, communication skills was rated highest and was reported as useful/very useful by 83% of respondents, followed by personal development training (78%), management training (75%) and mentoring (72%).

4.6 A SUCCESSFUL CAREER IN RESEARCH INSTITUTES

Respondents were asked to select, from an alphabetical list of thirty-five 'activities', all those which were most important in contributing to a successful RI career. The differences between men's and women's choices overall were not significant. Research publications (70%) were followed by working on high profile successful projects and programmes (57%). Obtaining external research funding (44%) was followed by initiating and contributing to new projects and programmes (42%).

Contributors to a successful career by gender- Table 32

The views of respondents at the two senior levels (principal scientists and research directors) i.e. individuals who had already progressed their careers and who were positioned to know 'what matters' were compared with the views of the respondents overall. This comparison showed no difference in the ordering of the top four factors, although each of them was rated important by a higher percentage of the senior group:

- research publications, selected by 81% of the senior group and (overall 70%)
- work on high profile research/successful programmes, selected by 73% senior (overall 57%)
- obtaining external research funding, 63% of the senior (overall 44%)
- initiate/collaborate on new projects/programmes, ranked fourth, 55% senior (overall 42%)
- international experience was ranked fifth by 42% senior and ranked twelfth overall by 23%
- conference keynote/plenary speaker 33% of the senior group (overall 15%)

Contributors to a successful career comparison of senior with all respondents-Table 33

The views of this same senior group in RI were compared with their HE equivalents (senior lecturers/readers and professors). Again there were no significant differences in the views of men and women. However, the list of 'important' factors in HE was much shorter. Thirteen factors were chosen by over 30% of the RI respondents, with only four in HE. In HE the high profile/visible individual activities featured, whereas RI encompassed a wider and more 'collaborative' range of activities:

- | | |
|-------------------------------------|--|
| research publications | top for both groups RI(81%), (HE 90%) |
| obtaining external research funding | second in HE (77%) and third in RI (63%) |
| attracting PhD students | third for HE 41%, but not applicable in RI |
| conference keynote/plenary speaker | fourth for HE (41%), twelfth in RI (33%) |

Contributors to a successful career comparison of senior group RI and HE equivalents-Table 34

5 WORK LIFE BALANCE

5.1 ORGANISATIONAL APPROACH TO WORK LIFE BALANCE

Respondents were asked how they viewed their organisation's approach to work life balance. Overall 37% of respondents described it as good, and 50% adequate. The range across the research councils for those giving their organisations a 'good' rating was from 49% to 31%. Those giving their organisation a 'poor' rating ranged from 15% to 6%. Directors scored their organisations higher than their more junior colleagues, with 50% of them rating their organisations as 'good'. However, only 33% of principal scientists gave their organisations a 'high' rating.

Employers approach to work life balance by level-Table 35

5.2 MOST IMPORTANT CONTRIBUTORS TO A GOOD WORK LIFE BALANCE

Respondents were asked which (of a list of twelve 'facilities,') were the most important contributors to a good work life balance:

flexibility in hours/days worked/work pattern was chosen by the most
80% overall, women with children 86% (men with children 79%)

ability to ask for time off at short notice within leave allocation with no need to give reasons came next
55% overall, women with children 59% (men with children 54%)

awareness of issues being shown by senior management followed
43% overall, women with children 49% (men with children 47%)

home working came next and showed a similar pattern
40% overall, women with children 46% (men with children 42%)

meetings finishing on time, especially those at the end of the day, was the one area where women with children diverged most from the overall response, and that for men with children:
29% overall, 44% of the women with children (men with children 28%).

Most important contributors to a good work life balance-Table 36

5.3 WORK LIFE BALANCE FACILITIES AVAILABLE / IN OPERATION

Respondents were asked which of the same list of 'facilities' they had access to, or were in operation in their organisations. There was some relationship between the facilities which respondents regarded as important and those to which they had access:

flexibility in hours/days worked/work pattern, chosen as important by 80%, was 'available' to 68%

being able to ask for time off at short notice, chosen as important by 55% was 'available' to 59%

awareness of issues being shown by senior management, chosen as important by 43% was 'available' to 23%

home working, chosen as important by 40%, was 'available' to 33%

meetings finishing on time, chosen by 29%, was 'available' to 13%

Responses varied across the levels on access to / the availability of work life balance facilities:

directors reported the highest levels of access and availability, with

85% reporting flexible working

61% being able to work at home

48% recognising the importance of 'awareness of issues' shown by senior management

44% had meetings on a regular pattern to allow planning

34% had meetings that finished on time at the end of the day

24% had good notice of important meetings

principal and senior scientists came between their directors and the scientists in terms of access and availability

scientists fared differently, and reported lower levels of availability and access to work life balance facilities:

64% flexible working

25% being able to work at home

10% had meetings that finished on time at the end of the day

Work life balance facilities available/ in operation by level-Table 37

Across the organisations there was no clear relationship between the views of the respondents on the employers' approach to work life balance and the level of availability of work life balance facilities. The council which was scored highest by its respondents was not at the top of the list in terms of availability, except for important meetings/activities on a regular pattern which was available to 32% of their respondents (overall to 19%).

5.4 TRAVEL

Overall 86% viewed the travel requirements of their jobs as acceptable, with no difference between men and women. Respondents were asked what was most important in making travel requirements easier. None of the twelve suggestions scored highly, the top rated 'work from home immediately before and after travel' was instanced by 11% of respondents.

**Travel requirements of job by level and gender-Table 38
Most important in making travel requirements easier-Table 39**

6 PERCEPTIONS OF EQUALITY AND OPPORTUNITY

6.1 SUPPORT, OPPORTUNITY AND ENCOURAGEMENT

Respondents were asked about their experiences of the support, opportunities and recognition they received from their 'research centre'. Overall, for 5 of the 9 statements the percentages of men and women in agreement were significantly different:

	Men	Women
Senior colleagues supportive	66%	61%
Admin contribution valued	44%	39%
Opportunity to serve on imp committees, mtgs and projects	46%	35%
Encouraged to develop CV	56%	47%
External professional activities valued	34%	27%

The table below shows the percentage of respondents agreeing with each statement - by grade and gender. For principal scientists there were two areas of significant difference and one each at senior scientist and scientist levels. As might be expected the proportions in agreement change through the grades (for both men and women):

	ResDir N=59	Pr Sci N=328	Sn Sci N= 633	Sci N=1380	
Senior colleagues are supportive					
Men	87%	72%	65%	63%	*
Women	82%	48%	55%	63%	*
My line manager is supportive					
Men	86%	78%	83%	81%	*
Women	100%	63%	73%	79%	
My research contribution valued					
Men	83%	72%	64%	53%	*
Women	89%	60%	57%	58%	
My admin contribution valued					
Men	88%	53%	48%	34%	*
Women	91%	42%	46%	36%	*
I feel socially integrated					
Men	80%	66%	63%	58%	*
Women	73%	52%	65%	67%	*
I have opportunity to serve on imp committees, mtgs and projects					
Men	89%	64%	49%	33%	*
Women	100%	49%	43%	30%	*
I am encouraged to undertake activities which contribute to my career development					
Men	79%	65%	55%	52%	*
Women	90%	46%	50%	46%	
Successes in my working life are celebrated					
Men	57%	40%	29%	29%	*
Women	88%	38%	32%	27%	*
Value is placed on my external professional activities					
Men	71%	49%	36%	23%	*
Women	63%	48%	35%	23%	*

Notes

The small number of women in the top two levels which magnifies the percentages

* denotes significant differences between grades (ie along the horizontal line)

Bold and shading denotes significant differences between men and women within a grade

The views of RI women and men in the 35 to 50 age band were compared with those in the same age group in HE. This group was identified as the group which included the potential leaders of science for 2020, if they stayed the course. This group included 40% of all women respondents (men 45%).

In general women in this group appeared less likely than their male colleagues to be in agreement with the statements made. There were two areas where the differences were significant: the opportunity to serve on important committees, meetings and projects reported by 38% of women respondents (men 48%) and encouragement to undertake activities contributing to career development, reported by 44% of the women (men 52%). And:

76% of women (men 77%) agreed their line manager was supportive (question not asked in HE)

61% women (men 60%) agreed they were socially integrated
(HE women 52% men 61%)

57% of women (men 64%) agreed their senior colleagues were supportive
(HE women 54% men 64%)

57% of women (men 61%) agreed their research contribution was valued
(HE women 60% men 73%)

44 % of women (men 52%) agreed they were encouraged to develop their careers
(HE women 48% men 51%)

40% of women (men 43%) agreed their administrative contribution was valued
(HE women 47% men 54%)

36% of women (men 48%) had the opportunity to serve on important committees
(HE women 41% men 58%)

30% of women (men 36%) agreed their external professional contributions were valued
(HE women 32% men 35%)

26% of women (men 31%) agreed their successes were celebrated
(HE women 31% men 37%)

Support opportunity and acknowledgement age band 35 to 50 by gender in RI and HE-Fig 5

6.2 PERCEPTIONS OF EQUALITY- ADVANTAGE AND DISADVANTAGE

Women's perceptions of equality were different from those of their male colleagues. In RI, as in HE, notably higher percentages of women overall stated that they perceived women to be disadvantaged on:

promotion	women 42% (men 15%) (HE women 46%, men 16%)
visibility to senior management	women 36 % (men 12%) (question not asked in HE)
salary	women 26% (men 7%) (HE women 36% men 11%)
access to career development	women 17% (men 4%) (HE women 36% men 12%)

Again there were changes through the levels: the differences are more pronounced when disaggregated by level. What is particularly striking is the high proportion of women at principal and senior scientist level who feel women are disadvantaged with regard to 'visibility to senior management' and 'promotion'.

At **director** level there was a significant difference between women's and men's perceptions on just two topics:

salary - 55% of women (men 89%) perceived no difference, but 45% of women (men 9%) thought women disadvantaged

sabbatical leave – 64% of women (men 82%) perceived no difference

At the levels below director there were significant differences between the perceptions of women and men on all the topics with the largest differences shown below

At **principal scientist** level there was a significant difference between the perceptions of women and men on all 9 topics. The greatest differences were on

visibility to senior management - 59% of women (men 16%) thought women were disadvantaged

promotion - 48% of women (men 22%) thought women were disadvantaged

salary - 39% of women (men 10%) thought women were disadvantaged

access to career development - 38% of women (men 7%) thought women were disadvantaged

access to funds - 25% of women (men 2%) thought women were disadvantaged

at **senior scientist** level again significant differences on all 9 topics, the largest being on

promotion - 56% of women (men 18%) thought women were disadvantaged

visibility to senior management - 51% of women (men 14%) thought women were disadvantaged

salary - 29% of women (men 7%) thought women were disadvantaged

access to career development - 27% of women (men 4%) thought women were disadvantaged

at **scientist** level again significant differences on all 9 topics, the greatest on the same areas as for the senior scientists

promotion - 39% of women (men 11%) thought women were disadvantaged

visibility to senior management 30% of women (men 9%) thought women were disadvantaged

salary - 23% of women (men 6%) thought women were disadvantaged

Advantage and disadvantage by level and gender- Table 41

A comparison was made between RI and HE :

at director level

promotion 27% of women (men 21%) thought women were disadvantaged
(HE women 47% men 17%)

salary 46% of women (men 9%) thought women were disadvantaged
(HE women 50% men 15%)

access to career development
9% of women and men thought women were disadvantaged
(HE women 35% men 13%)

at principal scientist level

promotion 48% of women (men 22%) thought women were disadvantaged
(HE women 48% men 15%)

salary 39% of women (men 10%) thought women were disadvantaged
(HE women 36% men 9%)

access to career development
38% of women (men 7%) thought women were disadvantaged
(HE women 41% men 12%)

at senior scientist level

promotion 56% of women (men 18%) thought women were disadvantaged
(HE women 48% men 16%)

salary 29% of women (men 7%) thought women were disadvantaged
(HE women 38% men 10%)

access to career development
27% of women (men 4%) thought women were disadvantaged
(HE women 35% men 9%)

at scientist level

promotion 39% of women (men 11%) thought women were disadvantaged
(HE women 43% men 13%)

salary 23% of women (men 6%) thought women were disadvantaged
(HE women 27% men 10%)

access to career development
13% of women (men 3%) thought women were disadvantaged
(HE women 32% men 8%)

Advantage and disadvantage by level and gender in RI and HE- Fig 6