



$E=MC^2$

# FACING THE FACTS

Women's Participation in  
Science, Engineering and Technology

**2009**



science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA



NATIONAL ADVISORY COUNCIL ON INNOVATION



Science, Engineering and Technology  
for Women (SET4W)



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## TABLE OF CONTENTS

	P
MESSAGE FROM THE MINISTER	2
INTRODUCTION	4
STUDENT ENROLMENTS AND GRADUATIONS	6
HUMAN RESOURCES FOR SET	20
PUBLICATION OUTPUT	28
FUNDING ALLOCATION	32
SCIENTIFIC RATING	40
CONCLUSIONS	45
ABBREVIATIONS & ACRONYMS	IBC

# FACING THE FACTS

## FOREWORD



**Naledi Pandor**

*Minister of Science and Technology*

South Africa's R&D capacity has improved over the recent past, but we will have to increase the number of PhD graduates five-fold over the next 10 to 20 years in order to build competencies for a knowledge-based economy.

Our strategies include a focus on Women's access to Science, Engineering and Technology. While encouraging progress has been made with demographic representation, there is still much to be done to increase the participation of women in SET. In 2001 women represented more than half all higher-education enrolments (53%) and graduates (58%). At universities, women were in the majority at the undergraduate and lower postgraduate levels, although they were not as well represented at upper postgraduate level (42% of enrolments and 43% of graduates). In terms of race, white women still constitute by far the greatest proportion of university doctoral full-time equivalent enrolments (66%) and graduates (75%).

The reasons for the under-representation of women (particularly black women) in the SET

sector include financial difficulties before and during tertiary studies, gender stereotyping, legacies of disadvantage in black communities, negative dynamics at workplaces, and the lack of attention to women's specific needs.

As Facing the Facts says, "Although women are reaching equity in terms of access to and employment in S&T, they still only represent 33% of all publishing scientists, based on data from SA Knowledgebase. Furthermore, female publishing scientists have contributed only a quarter of all the outputs produced by South African scientists over the past 10 years."

The Department of Science and Technology has to do more to attract women to careers in SET and keep them there. All our efforts to ensure a sustainable knowledge-based economy, including increasing the number of research chairs, facilitating collaborations and public-private-partnerships, and paying due attention to intellectual property rights with export commercial potential, must take into account the importance of incorporating the talents of women into the SET workforce and academia.

The updated Facing the Facts is an important contribution to our efforts to mainstream women in the SET sector, and I recommend that public and private stakeholders make use of this booklet to inform their strategic decisions.



**Naledi Pandor, MP**

*Minister of Science and Technology*

# FACING THE FACTS

## INTRODUCTION

Gender equality is one of the core ideals preserved in the Bill of Rights of the South African Constitution (1993). The government has, therefore, adopted the approach of 'mainstreaming gender' in order to respond to gender inequalities. To do that, the government has established 'gender desks' or 'gender focal points' within each government department, whose responsibility is to ensure the integration of a gender perspective into all policy and implementation activities. The government has also developed policy and legislation that tagged women as a specific group e.g. Employment Equity legislation.

A strong feature of the focus on women and gender is the emphasis on the under-representation of women in the science and technology human resource base. For example, one of the key weaknesses in the existing science and technology system identified in the Research & Development (R&D) Strategy (2002) is the "frozen demographics" of the human resource base. The R&D Strategy notes that the scientific workforce in South Africa is shrinking and growing older insofar as "black and women scientists, technologists and engineers are not entering the academic publishing ranks and that the key research infrastructure is composed of people who will soon retire." Furthermore, women tend to publish considerably less than their male counterparts, with the publication outputs of women in the 1990s comprising about one fifth of the total.

Similarly, the White Paper on higher education (Department of Education 1997) highlighted a range of weaknesses and key challenges in the existing higher education system. For example there is an inequitable distribution of access and opportunity for students and staff along lines of race, gender, class and geography. In addition there is also a shortage of highly trained graduates in fields such as science, engineering, technology and commerce which is ascribed to the discriminatory practices of the past that limited black and women students access to higher education. According to the National Plan for Higher Education (Department of Education 2001), there are still few interventions in place to address issues of gender equity.

As part of a number of interventions suggested by the National Plan and R&D Strategy to address gender equity challenges, the establishment of the South African Reference Group [SARG] of Women in Science, Engineering and Technology (currently known as the Science, Engineering and Technology for Women [SET4W]) sub-committee of the National Advisory

Council on Innovation (NACI) was proposed. The aim in establishing the sub-committee was and still is to strengthen women-led initiatives in all phases of participation within the Science, Engineering and Technology (SET) sector, from school to career achievement.

As a result of the continued significant gender imbalances in the SET sector coupled with little evidence of strategies to address these, in 2008 the SET4W sub-committee commissioned a follow-up study to update the 2004 report entitled Facing the Facts: Women's Participation in Public Sector Science, Engineering and Technology (SET) in South Africa. Therefore this updated report continues to:

- Benchmark the status of women's participation in public sector SET
- Inform the activities of SET4W
- Inform planners and policy makers within government, higher education and SET institutions in terms of initiatives for women in the SET sector.

This condensed report is merely intended to provide highlights of salient findings in a concise format for a broad readership. It is hoped that these findings will stimulate interest in the status of women in the SET sector.

The full report is available on request.

# STUDENT ENROLMENTS AND GRADUATIONS

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South Africa's future SET workforce will be drawn from the current student population. At present, women are in the majority in terms of enrolments and graduations and the number of female graduates is rising annually. Women are still the minority in terms of enrolments and graduations at the upper postgraduate level, but are approaching 50% representation even at doctoral level.

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Women's Participation in  
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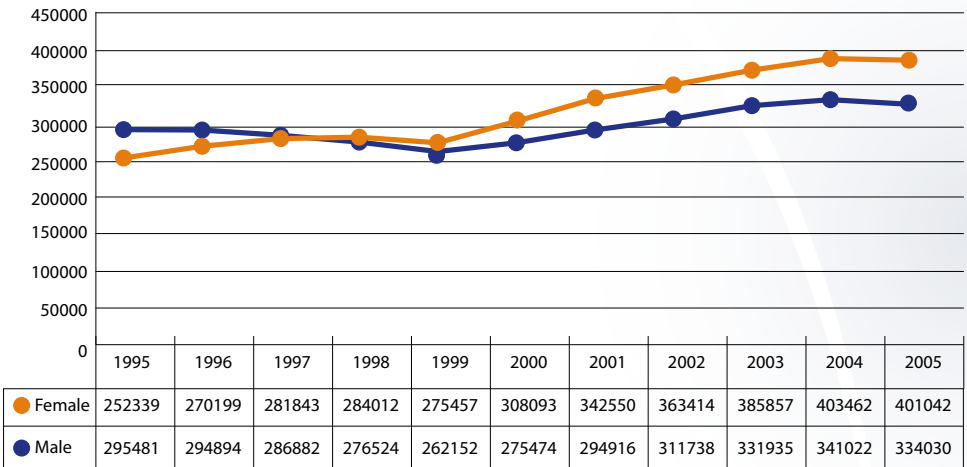


**FACT:**

**1% increment  
in female  
enrolments  
over a four year  
period between  
2000 & 2004**

Between 1995 and 1999 there was a slight decline in the number of male student enrolments in the higher education sector. After 1999, male student enrolments increased steadily but started flattening off in 2004. Female student enrolments increased between 1995 and 1998 and dropped somewhat in 1999. Female enrolments increased between 2000 and 2004 but shows a similar flattening of in 2005.

**HIGHER EDUCATION SECTOR ENROLMENTS BY SEX (1995-2005)**

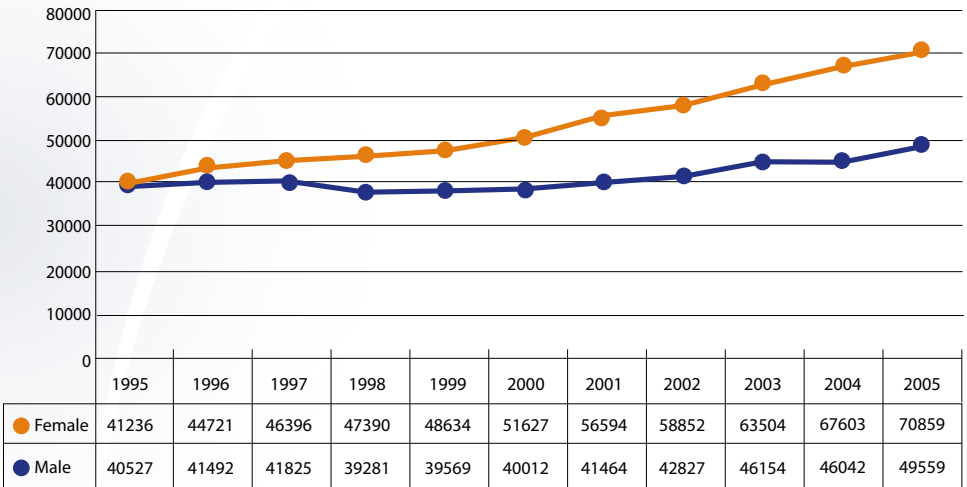


# FACING THE FACTS

Female graduations increased on average by about 8% each year between 1995 and 2005. Women currently represent 59% of all graduates in the higher education sector.

**FACT:**  
 59% of higher education graduates are women

HIGHER EDUCATION SECTOR GRADUATIONS BY SEX (1995-2005)



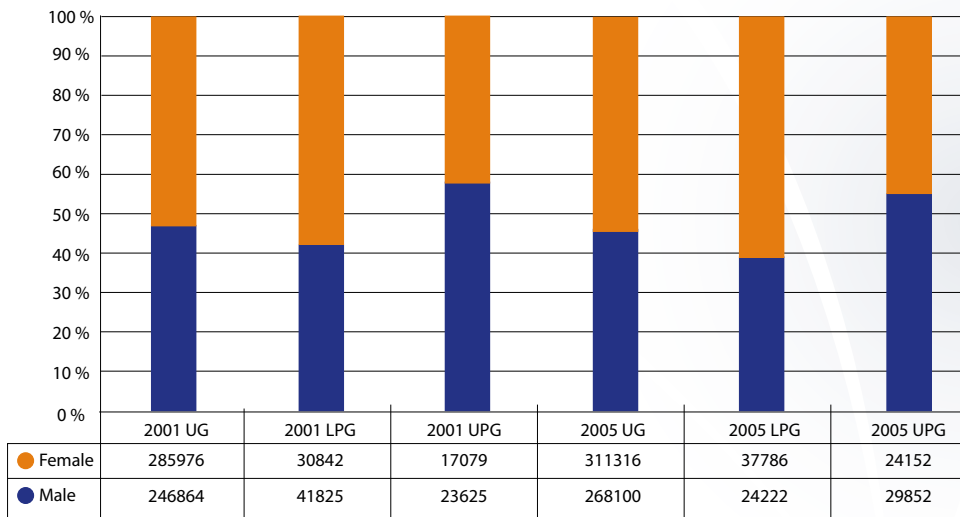


**FACT:**

3% increase in UPG enrolments comprised of women between 2001 & 2005

Of the 2005 enrolments, women were in the majority at the undergraduate and lower postgraduate levels but remain in the minority at the upper postgraduate i.e. Masters and Doctoral level. Women's share of enrolments at the upper postgraduate level did however increase from 42% in 2001 to 45% in 2005.

**HIGHER EDUCATION SECTOR ENROLMENTS BY SEX AND LEVEL OF STUDY (1995-2005)**



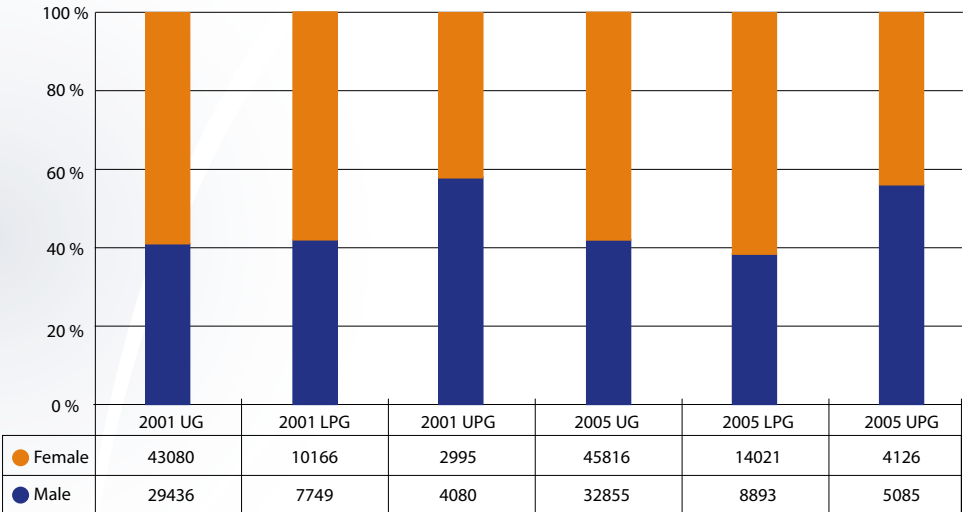
UG: Undergraduate | LPG: Lower postgraduate | UPG: Upper postgraduate

# FACING THE FACTS

There was a steady increase in female graduates at both the lower and upper postgraduate levels between 2001 and 2005, from 57% to 61% at lower postgraduate level and from 42% to 45% at upper postgraduate level.

**FACT:**  
 16% rise of UPG female graduates between 2001 and 2005

## HIGHER EDUCATION SECTOR GRADUATIONS BY SEX AND LEVEL OF STUDY (1995-2005)



UG: Undergraduate | LPG: Lower Postgraduate | UPG: Upper Postgraduate

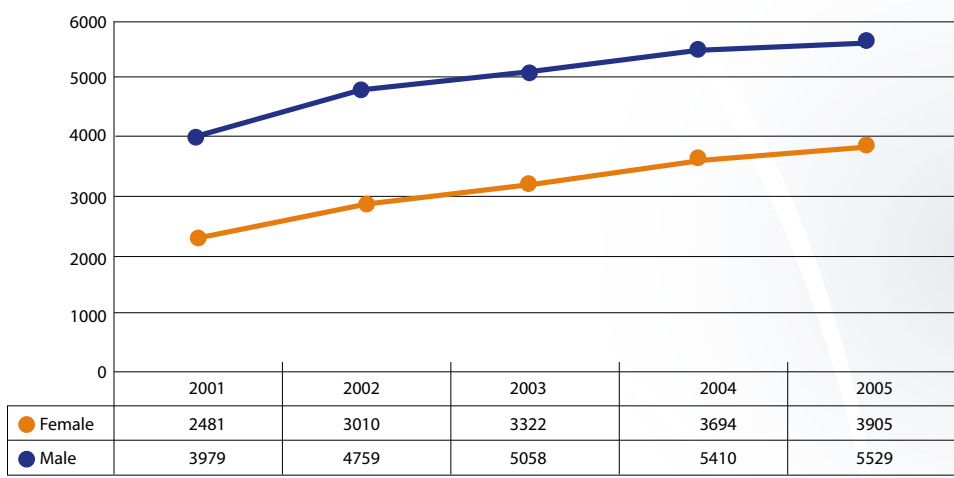


**FACT:**

41% female doctoral enrolments in 2005 represent a 3% increase from 2001

Doctoral enrolments have increased for both males and females over the past few years. The percentage of female enrolments has increased from 38% in 2001 to 41% of all doctoral enrolments in 2005.

DOCTORAL ENROLMENTS BY SEX (2001-2005)

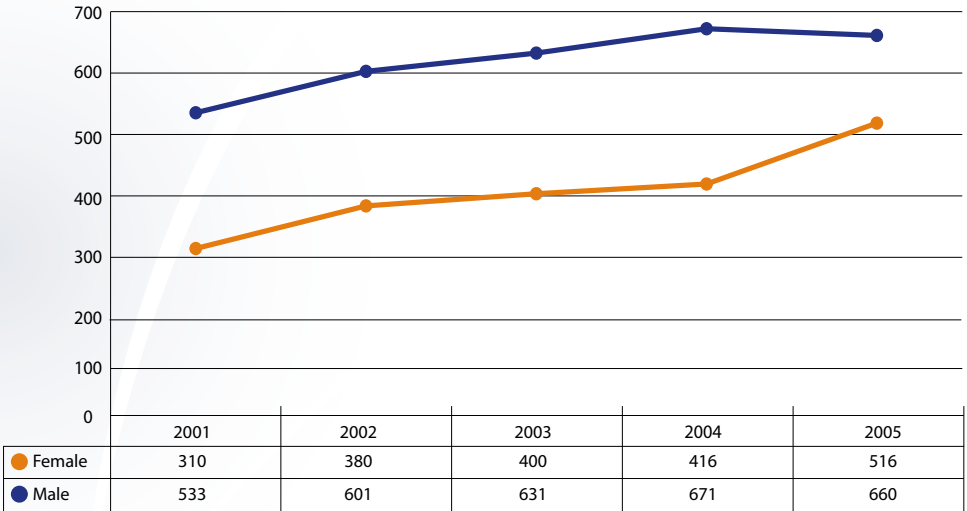


# FACING THE FACTS

The number of all doctoral graduates increased between 2001 to 2004. However, between 2004 and 2005, the number of male doctoral graduates declined by almost 2% while the number of female doctoral graduates increased by almost 24%.

**FACT:**  
between 2001 & 2005 females constituted 39% of the total doctoral graduates

DOCTORAL GRADUATIONS BY SEX (2001-2005)



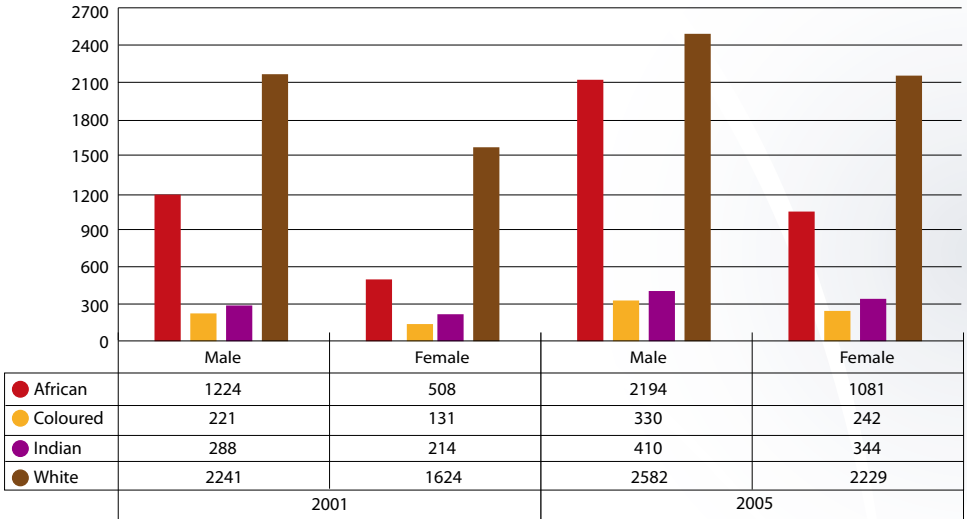


**FACT:**

of all the female enrolments in 2005, 57% were white women

The number of African female doctoral enrolments more than doubled between 2001 and 2005 from 508 to 1081; and increased their proportion of the total doctoral enrolments from 8% in 2001 to 11% in 2005. In 2005 white women still constituted the majority of female enrolments but this declined from 66% to 57%. African males made up 23% of the total doctoral enrolments and remained higher than that of the 11% African females.

DOCTORAL ENROLMENTS BY SEX AND BY RACE (2001 - 2005)

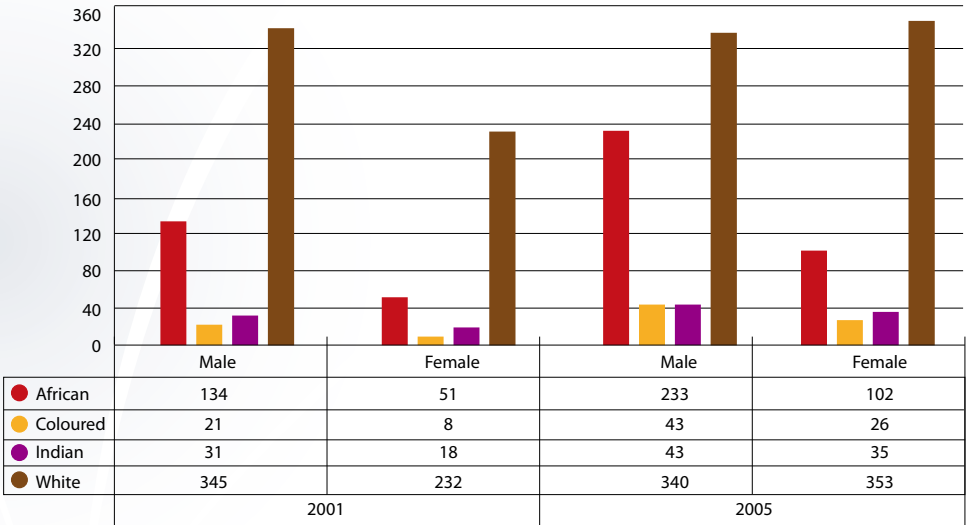


# FACING THE FACTS

There was substantial growth in the share of female doctoral graduates from 37% in 2001 to 44% in 2005. While the majority of these were White, the number for all other race groups also increased. Again, African males had a greater share of total doctoral graduates (20%) than African females (9%).

**FACT:**  
 there were 7% more female doctoral graduates in 2005 than in 2001

DOCTORAL GRADUATIONS BY SEX AND BY RACE (2001 - 2005)





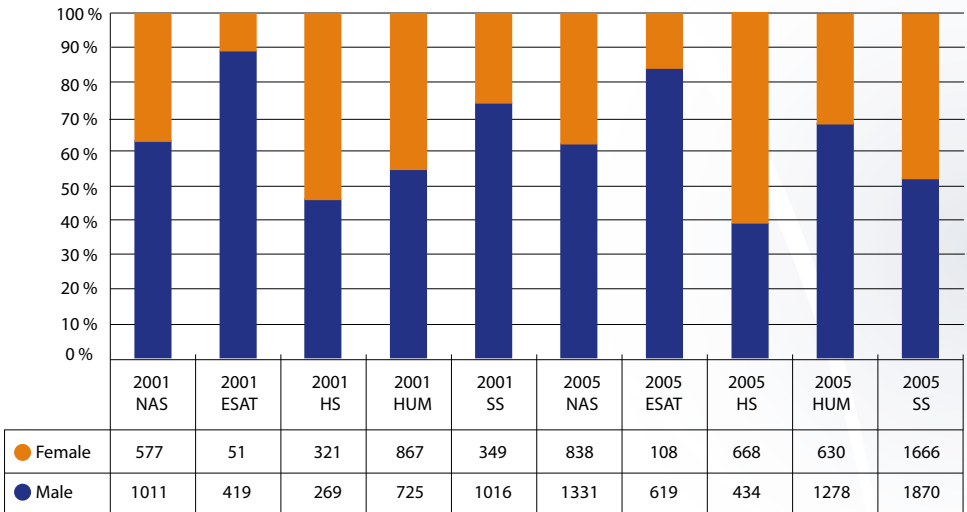


**FACT:**

66% increase in female doctoral enrolments for Social Sciences in 2005 from 349 in 2001 to 1666 in 2005

Female doctoral enrolments in the Social Science showed the largest increase in 2005 - from 25% in 2001 to 47% in 2005. In the Health Sciences, female doctoral enrolments also increased from 54% to 61% between 2001 and 2005; in Engineering Sciences and Applied Technologies from 9% to 15%; and in the Natural and Agricultural Sciences from 36% to 39%. However, the female share of doctoral enrolments in Humanities declined from 54% in 2001 to 33% in 2005.

**DOCTORAL ENROLMENTS BY SEX AND BY BROAD FIELD OF STUDY (2001 AND 2005)**



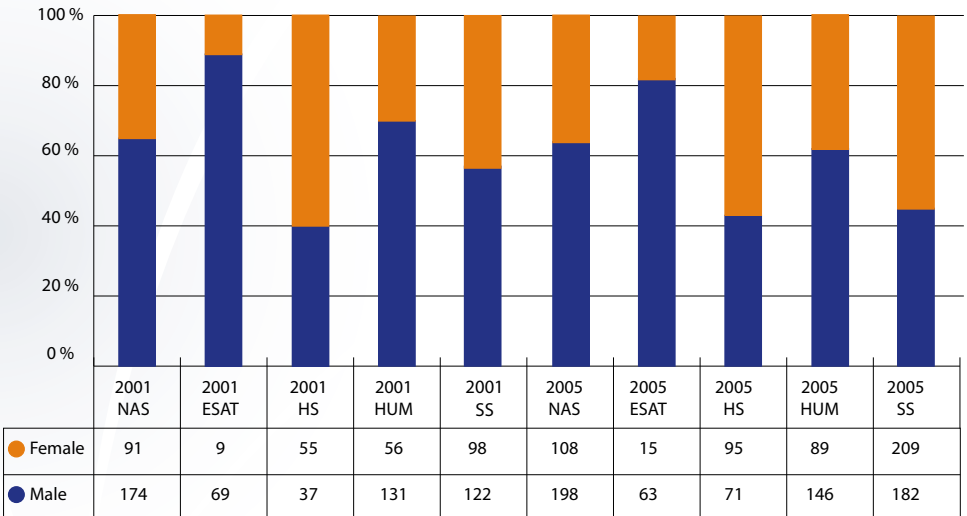
NAS: Natural and Agricultural Sciences | ESAT: Engineering Sciences and Applied Technologies  
 HS: Health Sciences | HUM: Humanities | SS: Social Sciences

# FACING THE FACTS

When viewed by broad field of study the proportion of female doctoral graduates increased most substantially in the Engineering Sciences and Applied Technologies (from 12% to 19%); in Humanities (from 30% to 38%); and in the Social Sciences (from 49% to 53%). In the Health Sciences, the female share of doctoral graduates declined from 60% in 2001 to 57% in 2005.

**FACT:**  
 17% increase in doctoral graduates in Eng. Sciences & Applied Technology comprised of women

## DOCTORAL GRADUATIONS BY SEX AND BY BROAD FIELD OF STUDY (2001 AND 2005)



NAS: Natural and Agricultural Sciences | ESAT: Engineering Sciences and Applied Technologies  
 HS: Health Sciences | HUM: Humanities | SS: Social Sciences

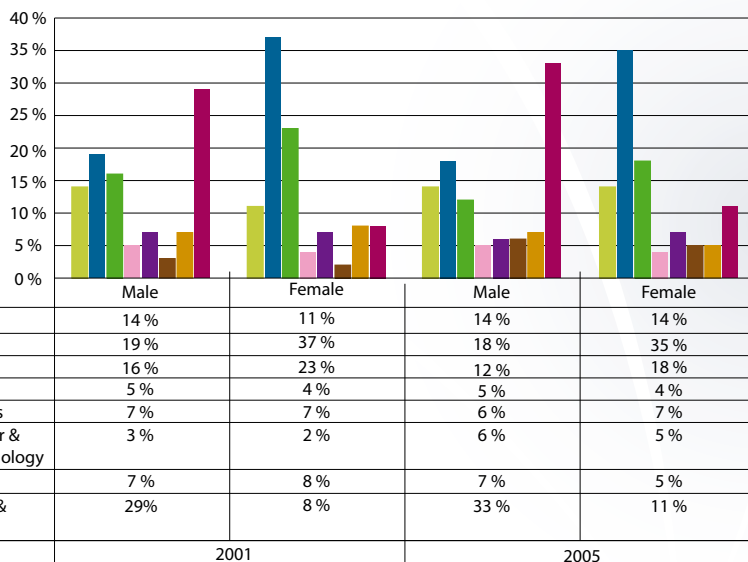


**FACT:**

**17% more females doing Biological Sciences than males in 2005**

In 2005 more than two-thirds of female doctoral enrolments were in the Biological Sciences (35%), followed by Chemical Sciences (18%) and Agricultural Sciences (14%). However, the percentage in Biological Sciences and Chemical Sciences declined between 2001 and 2005. There was an increase in Agricultural Sciences (from 11% to 14%); and in Information, Computer and Communication Technologies (from 2% to 5%), and Engineering Sciences and Applied Technologies (from 8% to 11%).

**DOCTORAL ENROLMENTS IN THE NATURAL AND AGRICULTURAL SCIENCES, ENGINEERING SCIENCES AND APPLIED TECHNOLOGIES COMPARING SEXES (2001 AND 2005)**



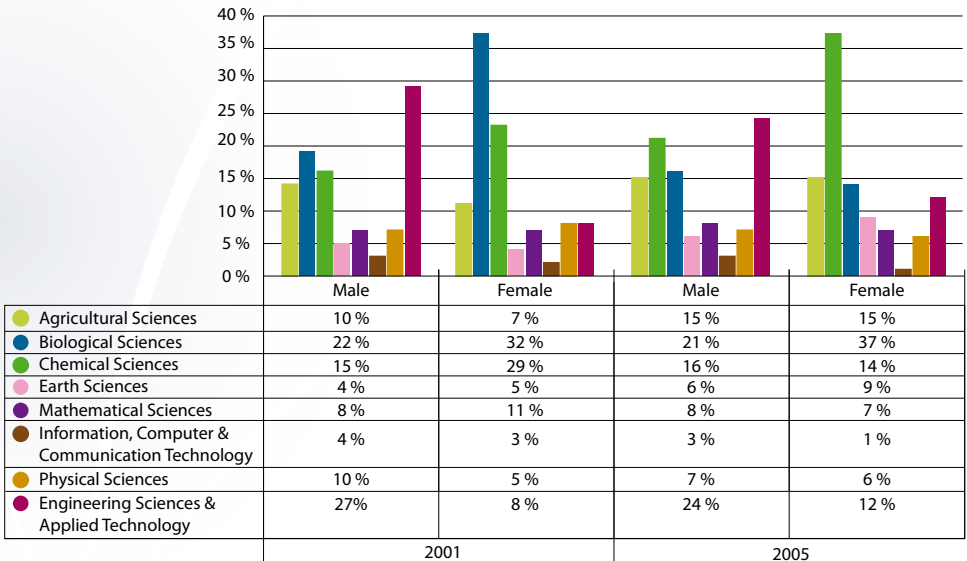
# FACING THE FACTS

In 2005 the majority of female doctoral graduates were in the Biological Sciences (37%), followed by Agricultural Sciences and Chemical Sciences. Compared to 2001, the most noteworthy increases in female doctoral graduates were in the Agricultural Sciences (from 7% to 15%) and Biological Sciences (32% to 37%).

The percentage of female doctoral graduates in the Chemical Sciences dropped considerably from 29% in 2001 to only 14% in 2005. The majority of male doctoral graduates were in the fields of Engineering Sciences and Applied Technologies (24%). Information, Computer and Communication Technologies produced the least doctoral graduates for both sexes.

**FACT:**  
 between 2001 & 2005, female doctoral graduates increased by 8% in the Agricultural Sciences and 5% in the Biological Sciences

DOCTORAL GRADUATIONS IN THE NATURAL AND AGRICULTURAL SCIENCES, ENGINEERING SCIENCES AND APPLIED TECHNOLOGIES COMPARING SEXES (2001 AND 2005)





WOMEN'S PARTICIPATION IN SCIENCE, ENGINEERING AND TECHNOLOGY

# HUMAN RESOURCES FOR SET

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The percentage of female R&D personnel increased steadily in the business sector, higher education sector and in the science councils between 2003 and 2005. The majority of female R&D personnel are employed in the public sector but are still in the lower employment ranks. Most women particularly those in the higher education sector, are working in the Social Sciences. There remains very limited female representation in the Engineering Sciences and Applied Technologies.

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Science, Engineering and Technology  
**2009**

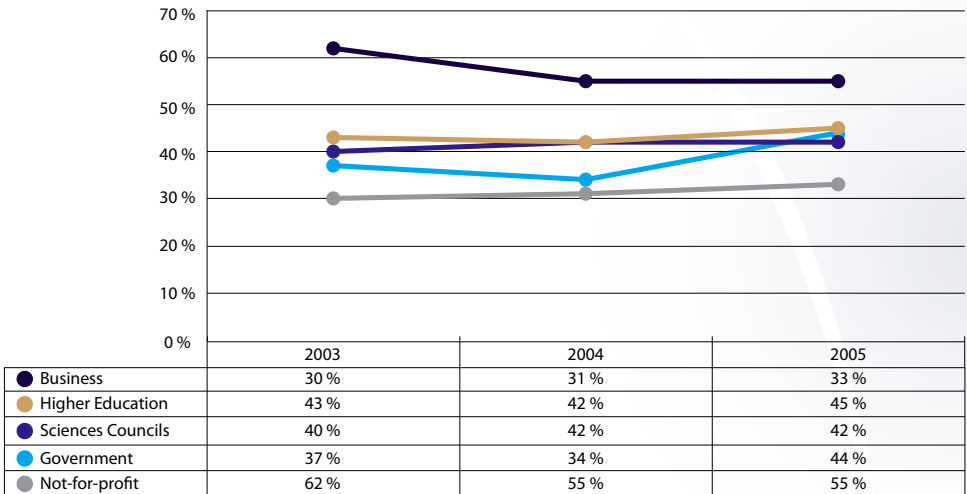


**FACT:**

females in the not-for-profit R&D sector declined from 62% to 55% in 2003, 2004/5 respectively

The percentage of female R&D personnel increased steadily in the business sector, higher education sector and science councils between 2003 and 2005. The percentage of female R&D staff in the not-for-profit sector declined over the same period, but this sector still had the highest female representation in R&D. The majority of female R&D staff were located in the public sector.

PERCENTAGE FEMALE R&D STAFF PER SECTOR (2003-2005)



# FACING THE FACTS

Women still make up the minority of R&D staff (40% in 2005). The proportion of female researchers increased steadily from 54% of all female R&D staff in 2003 to 60% in 2005.

**FACT:**  
 60% of all female R&D staff in 2005 were researchers

FEMALE R&D STAFF BY OCCUPATION (2003-2005)





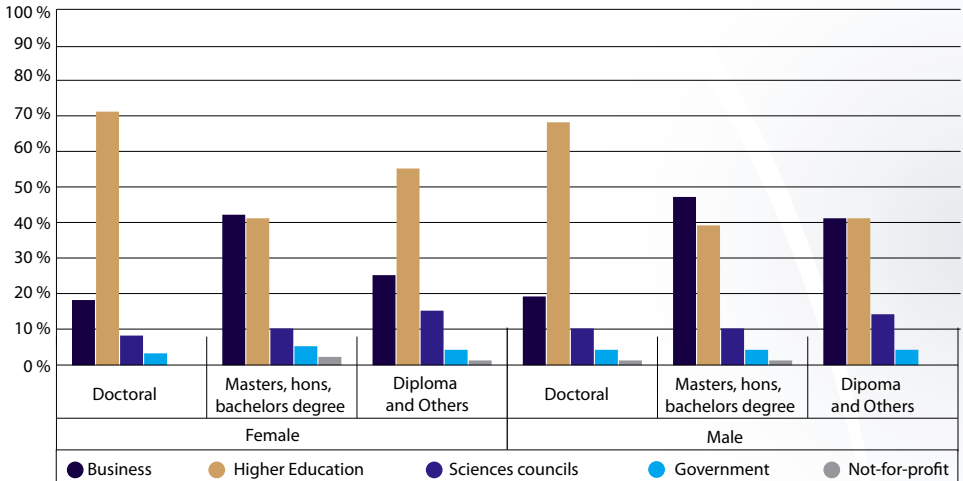


**FACT:**

71% of 2005 females with PhDs were employed in higher education compared to 17% in business in the same year

The majority of females with PhDs in 2005 were employed in the higher education sector, followed by the business sector, the science councils, government and the not-for-profit sector. Female R&D staff with masters, honours or bachelors degrees were mostly located in the business sector, followed by higher education and science councils. The same distribution by level of qualification of R&D staff per sector is also evident for male personnel.

QUALIFICATIONS OF R&D STAFF BY SEX AND BY SECTOR (2005)

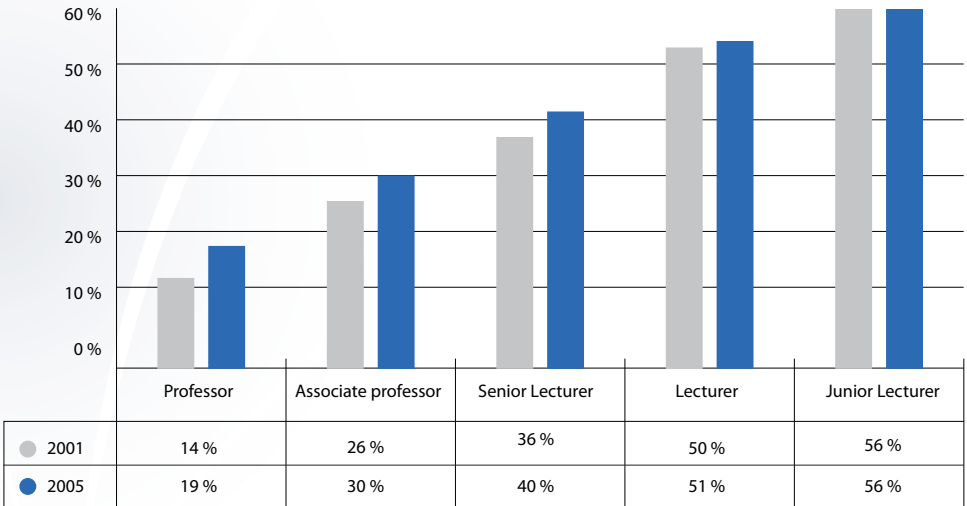


# FACING THE FACTS

The representation of female professors increased from 14% in 2001 to 19% in 2005. Increases were also evident at the rank of associate professor (from 26% to 30%) and senior lecturer (36% to 40%).

**FACT:**  
female Junior Lecturers remained static during 2001 and 2005

SHARE OF FEMALE REPRESENTATION IN THE HIGHER EDUCATION SECTOR BY RANK OF EMPLOYMENT (2001 AND 2005)



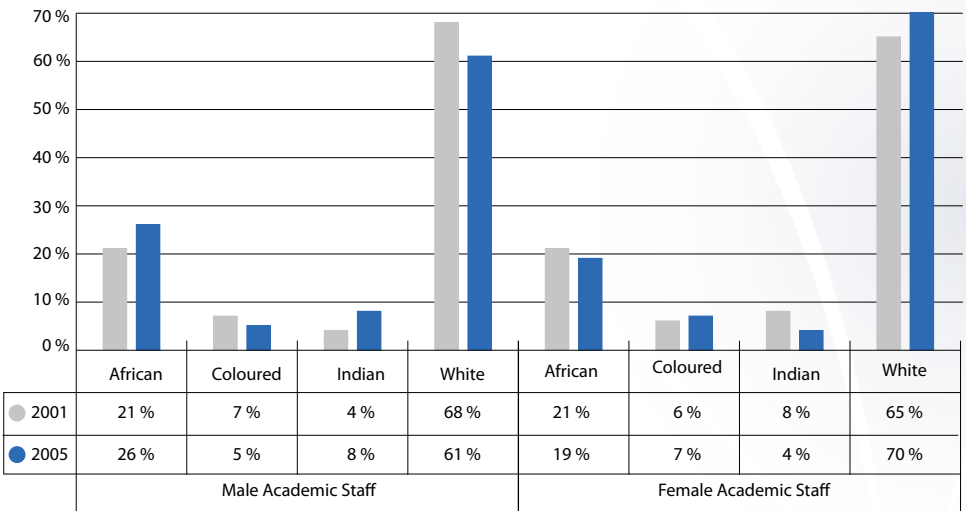


**FACT:**

**5% reduction of black academic staff between 2001 and 2005 (from 35% - 30%)**

In 2005, the majority of female and male academic staff in the higher education sector were White. For female academics the percentage of White women increased between 2001 and 2005, with corresponding declines in the percentages of African and Indian women. The number of White men had decreased, and there was an increased representation of African and Indian men.

**RACE DISTRIBUTION OF FEMALE AND MALE ACADEMIC STAFF IN THE HIGHER EDUCATION SECTOR (2001 AND 2005)**

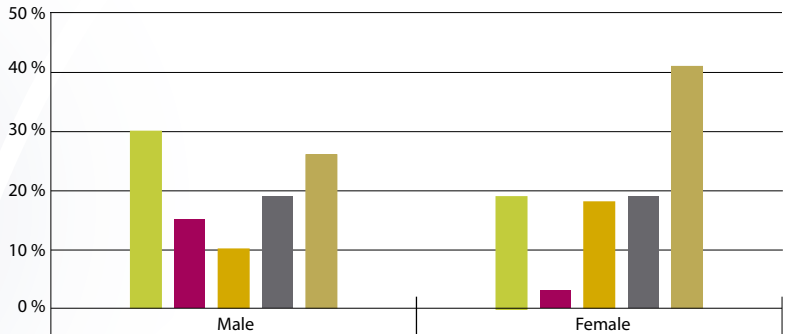


# FACING THE FACTS

The majority of female academic staff in 2005 were in the Social Sciences (41%). Only 3% of female academics were in the Engineering Sciences and Applied Technologies. The majority of male academic staff were in the Natural and Agricultural Sciences (30%). In the Engineering Sciences and Applied Technologies male representation of the total number of academics was only 15%. The bulk of academic staff in higher education were found in the Social Sciences and Humanities.

**FACT:**  
 41% of staff in the Social Sciences in 2005 were female

DISTRIBUTION OF FEMALE AND MALE ACADEMIC STAFF IN HIGHER EDUCATION ACROSS SCIENTIFIC DOMAINS (2005)



● Natural & Agricultural Sciences	30%	19%
● Engineering Sciences & Applied Technology	15%	3%
● Health Sciences	10%	18%
● Humanities	19%	19%
● Social Sciences	26%	41%

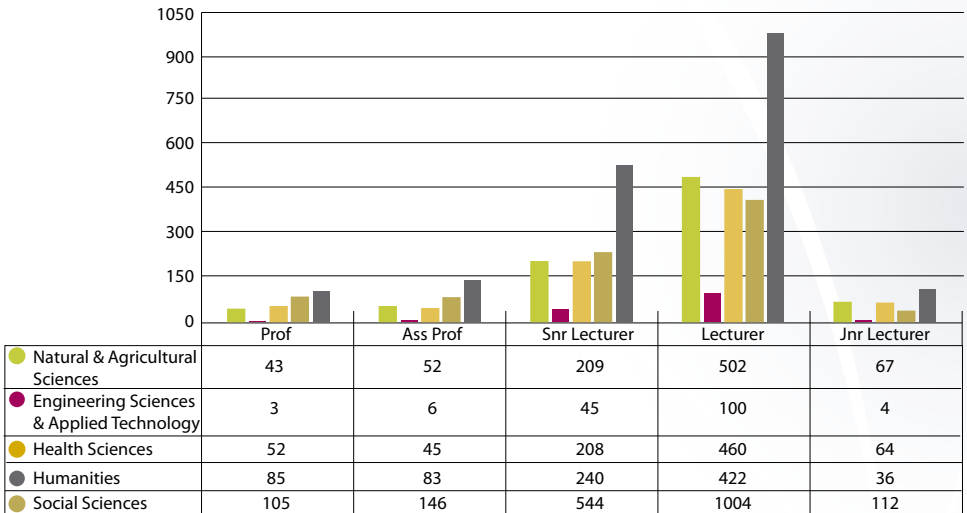


**FACT:**

2% of female academic staff in higher education were professors

The majority of female academic staff across all ranks were concentrated in the Social Sciences. Women were well represented at the rank of professor and associate professor in the Humanities, with fair representation in the Health Sciences and Natural and Agricultural Sciences. However, women were scarcely visible in the Engineering Sciences and Applied Technologies; with the most promising rank in this field being that of lecturer.

**DISTRIBUTION OF FEMALE ACADEMIC STAFF HEAD COUNT IN THE HIGHER EDUCATION SECTOR BY RANK OF EMPLOYMENT AND SCIENTIFIC DOMAIN (2005)**



# PUBLICATION OUTPUT

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Data from 2005, indicate that, although women are reaching equity in terms of access to and employment in S&T, they still represent only 33% of all publishing scientists, based on data from the SA Knowledgebase. Furthermore, female publishing scientists have contributed only a quarter of all the outputs produced by South African scientists over the past ten years.

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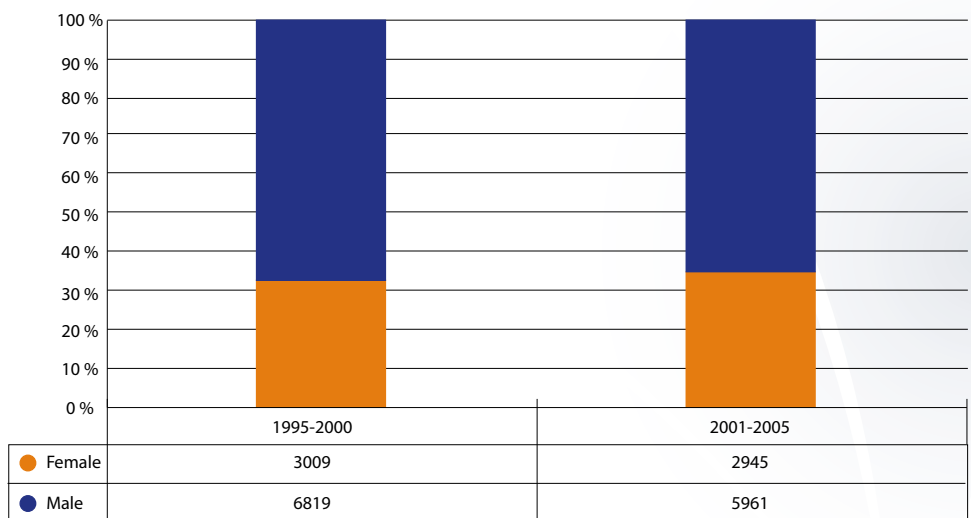
Women's Participation in  
Science, Engineering and Technology  
**2009**



**FACT:**  
female publishing scientists increased from 30% to 33% of the total over a 5 year period since 1995

There was a nett decrease in the number of men and women publishing between 2000 and 2005. However the proportion of women publishing increased from 30% to 33% over this period.

FEMALE AND MALE PUBLISHING SCIENTISTS (1995-2000 AND 2001-2005)

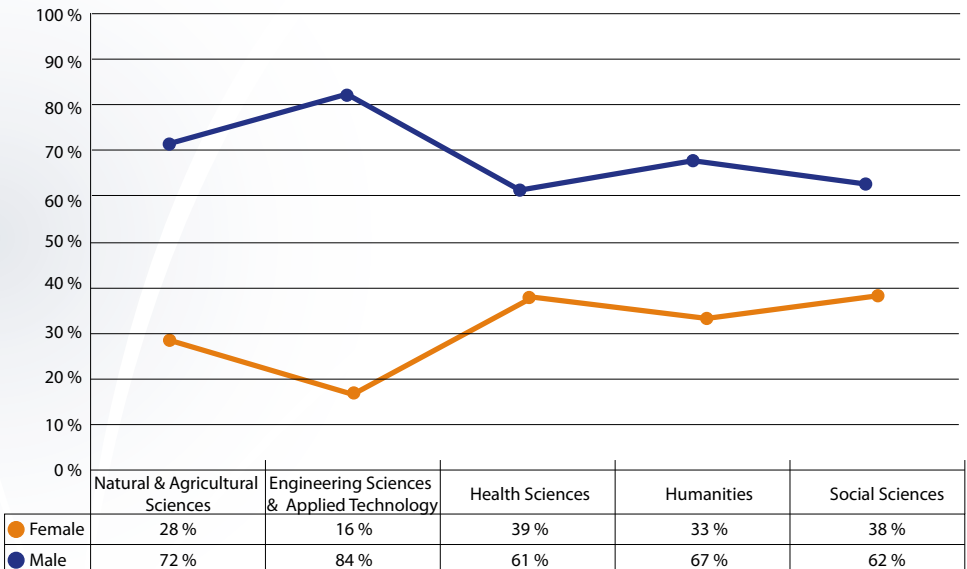


# FACING THE FACTS

Female publishing scientists were most visible in the Health Sciences, Social Sciences and Humanities. Male scientists dominated all fields of publications, but particularly in the Engineering Sciences and Applied Technologies.

**FACT:**  
 In 2005 women were the minority of publishing authors within Nat. Agr. Sciences (28%) and Eng. App.Tech (16%)

SEX DIFFERENCES IN THE SCIENTIFIC DOMAINS IN WHICH PUBLISHING SCIENTISTS WORK (2001-2005)



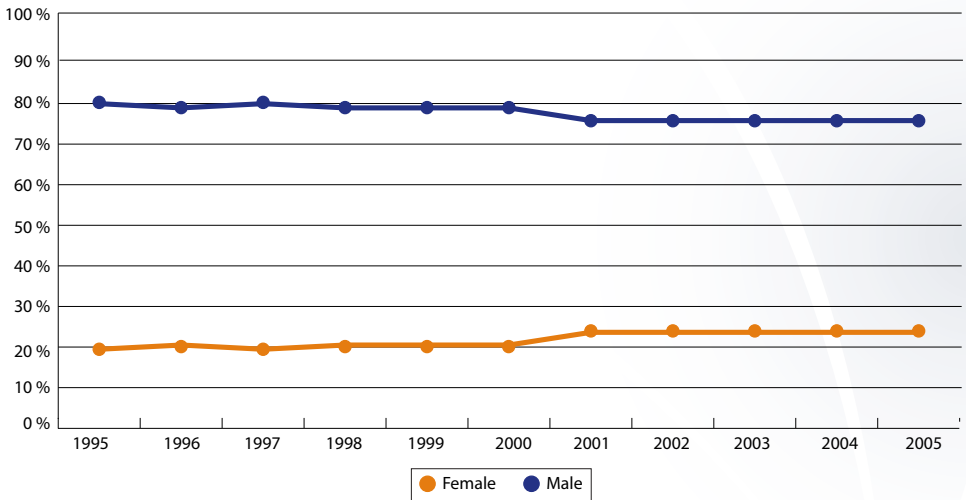


**FACT:**

4% increase  
in womens'  
contribution  
to published  
scientific artiles  
from 1995 &  
2005

Between 1995 and 2000, the share of article equivalents produced by women averaged about 21%. This increased to 25% in 2001, where after this percentage was maintained up to 2005. Female publishing scientists contributed a quarter of all article outputs produced by South African scientists during this period.

DISTRIBUTION OF ARTICLE EQUIVALENT AMONG FEMALE AND MALE SCIENTISTS  
(2001-2005)



# FUNDING ALLOCATION

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The only comparable and relatively complete datasets of the distribution of funding allocations among male and female students and staff are those of the National Research Foundation (NRF) and the Medical Research Council (MRC). These provide a useful indication of the sex differences in funding allocations in the public sector, but cannot be assumed to be representative of the sex distribution of all funding allocations across the SET sector.

Women received an equal share of funding in terms of masters and doctoral scholarships. In the case of research grants, the number of NRF grants awarded to female researchers has increased, but the portion of funding has decreased. The majority of scholarships and grants awarded to female students and researchers were in the fields of Natural and Agricultural Sciences and in the Engineering Sciences and Applied Technologies.

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Women's Participation in  
Science, Engineering and Technology

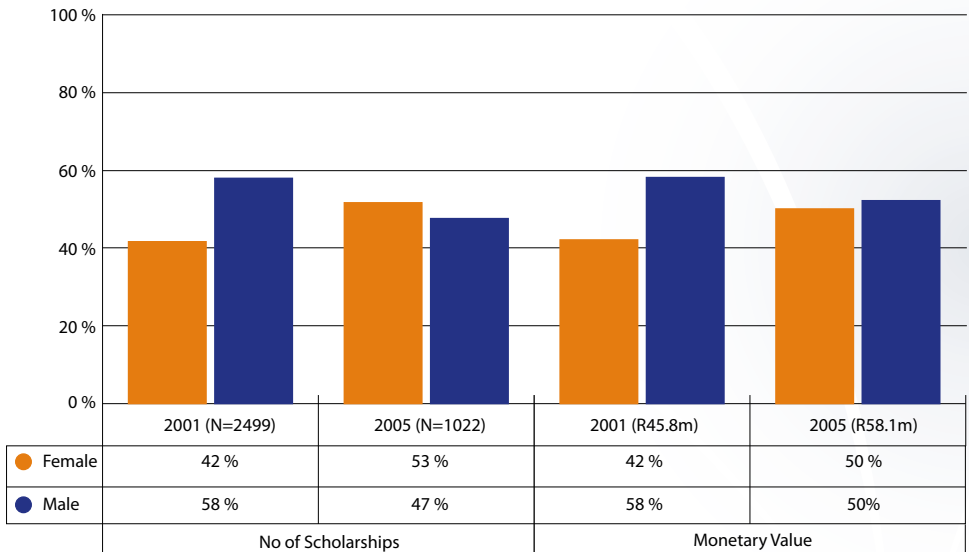
**2009**

**FACT:**

6% more NRF scholarships for females were more than males in 2005

The number of NRF masters and doctoral scholarships awarded to females increased substantially (from 42% in 2001 to 53% in 2005). The same pattern is evident in terms of funding received by female scholars (42% to 50%). In 2005, women received the majority of NRF scholarships and an equal proportion of the funding.

DISTRIBUTION OF NRF MASTERS AND DOCTORAL SCHOLARSHIPS, AND THEIR MONETARY VALUE, BY SEX (2001 AND 2005)

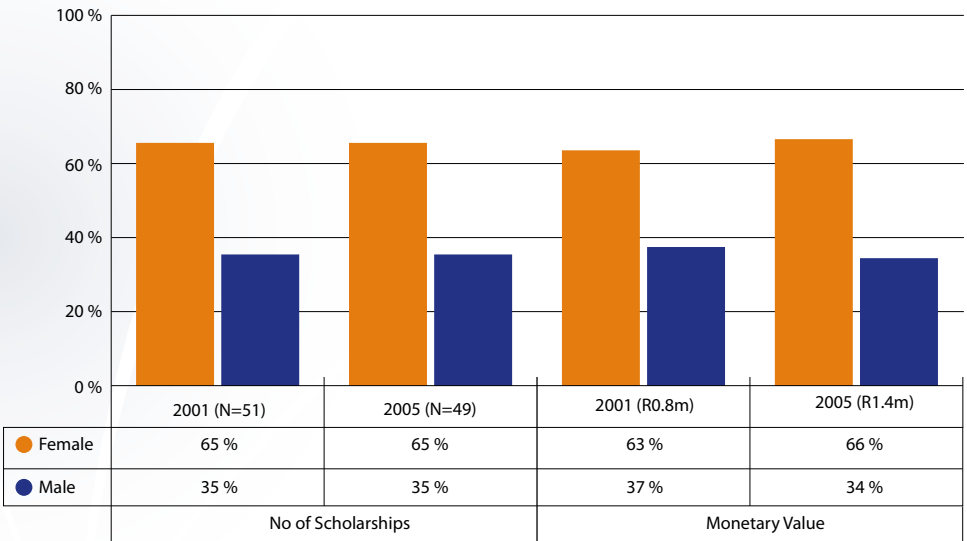


# FACING THE FACTS

As in 2001, in 2005 women still received the largest proportion of masters and doctoral scholarships from the MRC (65%). Women's share of the funding also increased, from 63% in 2001 to 66% in 2005.

**FACT:**  
30% more MRC masters and doctoral scholarships for females than males in 2005

MRC LOCAL MASTERS AND DOCTORAL SCHOLARSHIPS, AND THEIR MONETARY VALUE, BY SEX (2001 AND 2005)

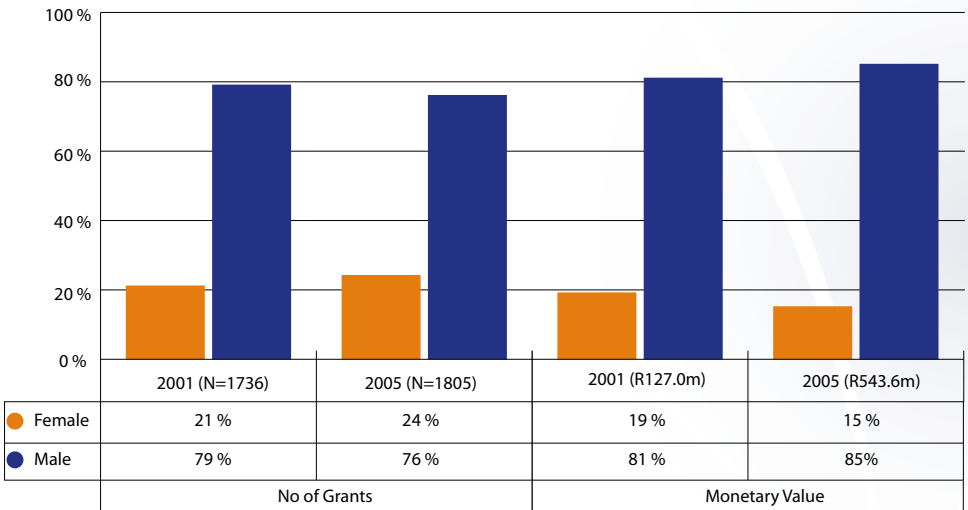


**FACT:**

females received R81,54 million (15%) of R543.6 million in NRF research grants funding in 2005

In 2001, women received 21% (364 out of 1736) of the total NRF research grants but only 19% of the funds. Although the number of research grants awarded to female researchers increased to 24% (433 out of 1805) in 2005, in terms of funding they received an even smaller proportion than in 2001 (15% of R543.6 million).

DISTRIBUTION OF NRF GRANT-HOLDERS, AND MONETARY VALUE OF GRANTS, BY SEX (2001 AND 2005)

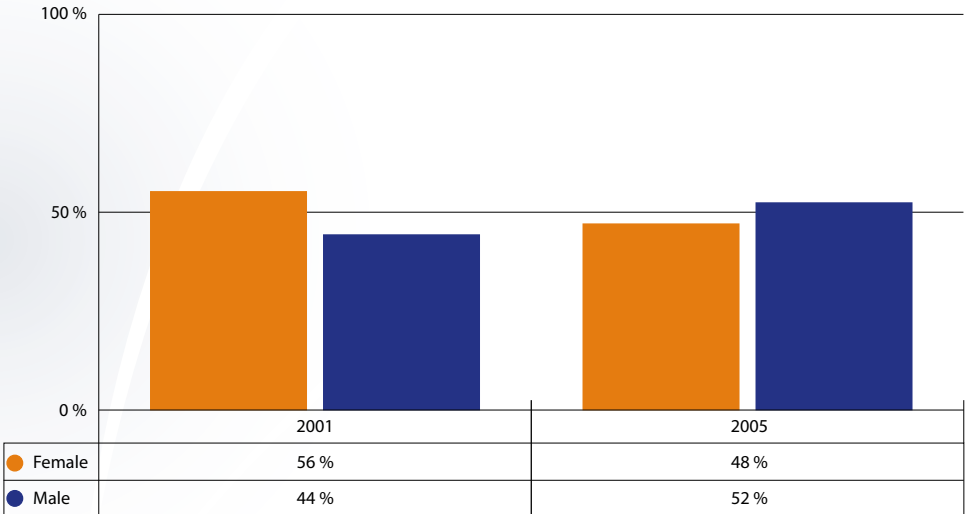


# FACING THE FACTS

In 2001 women received the majority of MRC self-initiated research grants (56%). However, in 2005 men received the majority of the same MRC grant (52%). The value of these grants in 2005 were nevertheless distributed almost equally amongst male and female recipients.

**FACT:**  
8% drop in female MRC self-initiated grant recipients between 2001 & 2005

SEX DISTRIBUTION OF MRC SELF-INITIATED GRANT RECIPIENTS (2001 AND 2005)



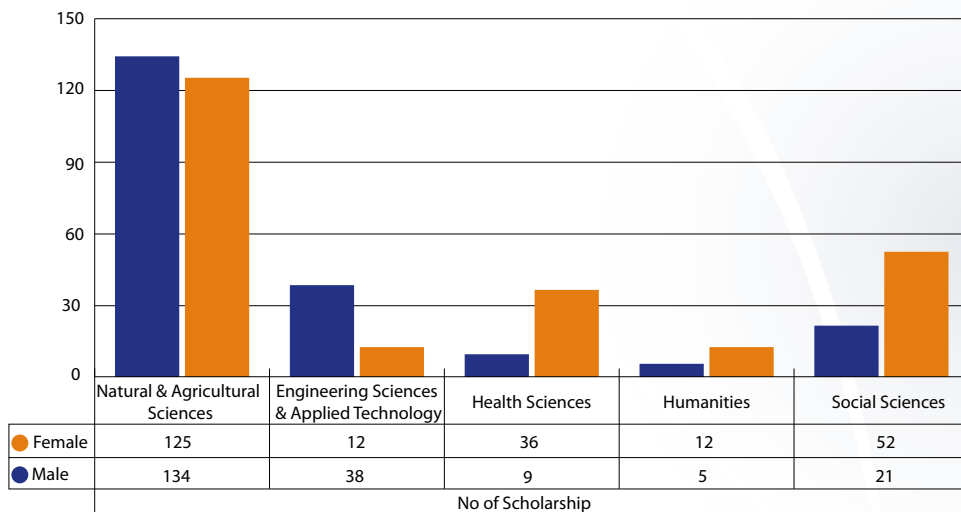
**FACT:**

24% of scholarships in Eng. Sciences & Technology were awarded to female students in 2005

The majority of NRF masters and doctoral scholarships were awarded to studies in the Natural and Agricultural Sciences (58%).

Of those awarded to female students, 48% were for studies in the Natural and Agricultural Sciences. The remaining scholarships for women were distributed across the Social Sciences (16%), Engineering Sciences and Applied Technologies (11%), Health Sciences (10%) and Humanities (4%).

DISTRIBUTION OF NRF MASTERS AND DOCTORAL SCHOLARSHIPS BY SEX AND BROAD FIELD OF STUDY (2005)

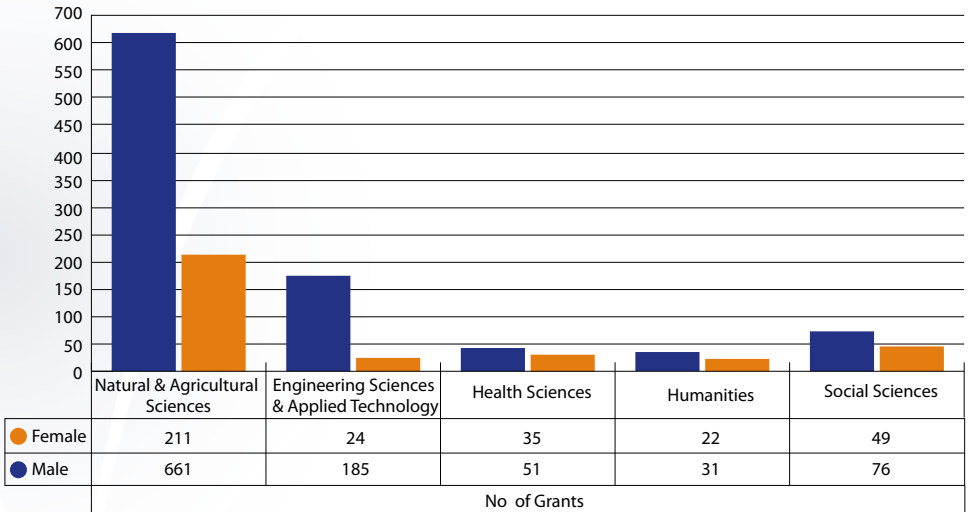


# FACING THE FACTS

The majority of NRF grants were awarded for research in the Natural and Agricultural Sciences (65%). Most female grant holders were in the Natural and Agricultural Sciences (62%), followed by the Engineering Sciences and Applied Technologies (16%), Social Sciences (9%), Health Sciences (6%) and Humanities (4%).

**FACT:**  
 25% of total NRF research grants were awarded to females

DISTRIBUTION OF NRF GRANT-HOLDERS BY SEX AND BROAD FIELD OF STUDY (2005)







WOMEN'S PARTICIPATION IN SCIENCE, ENGINEERING AND TECHNOLOGY

# SCIENTIFIC RATING

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The NRF rates individual scientists according to six rating categories: three pertain to established researchers (A,B & C) and the remainder to young researchers (P & Y) and researchers within a previously disadvantaged context (L). Rated researchers are eligible for funding for a period of five years with every successful application to the NRF.

The majority of rated scientists are men. The proportion of female rated scientists has increased slightly over the past few years. In 2005 there were no female rated researchers in category A and no female rated researchers in the Engineering Sciences and Applied Technologies. The inequities of the past are however receiving attention as in 2005 females represented the majority of researchers in category L.

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Women's Participation in  
Science, Engineering and Technology

**2009**

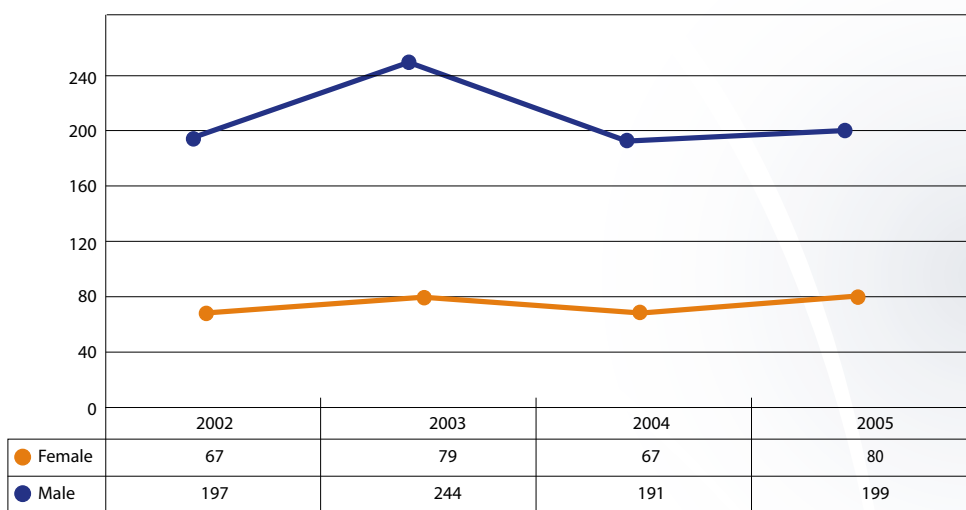


**FACT:**

29% of NRF-rated scientists in 2005 were female

Between 2002 and 2005 the majority of rated scientists were men (with a record number in 2003). The proportion of female rated scientists increased from 25% in 2001 to 29% in 2005.

SEX DISTRIBUTION OF NRF-RATED SCIENTISTS (2002-2005)

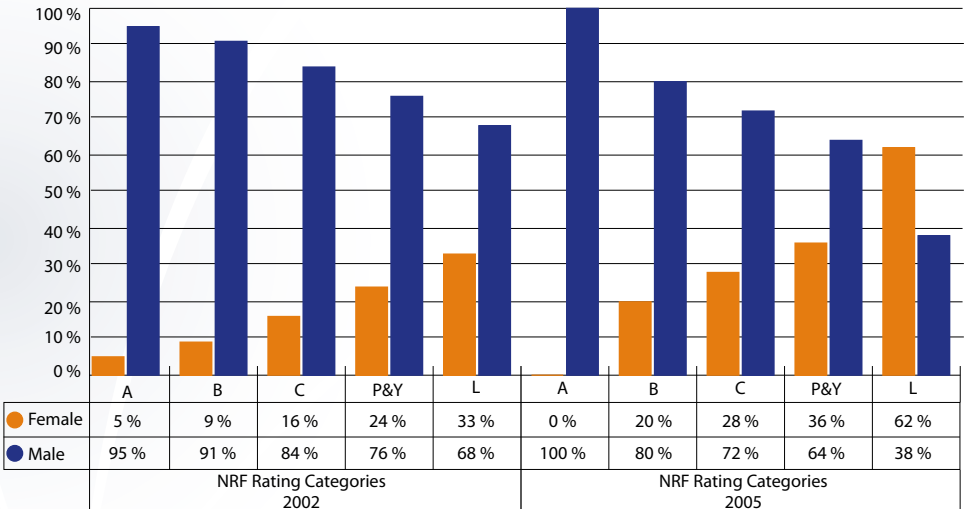


# FACING THE FACTS

In 2005 there were no female NRF-rated category A-rated researchers. Female representation increased at an average of 12% in category B, category C and category P&Y. Female researchers made up the majority of researchers in category L (62%) in 2005, which represents a growth of 29% in this category since 2002.

**FACT:**  
 62% of category L NRF-rated scientists in 2005 were female

NRF RATED RESEARCHERS BY SEX AND BY RATING CATEGORY (2002 AND 2005)



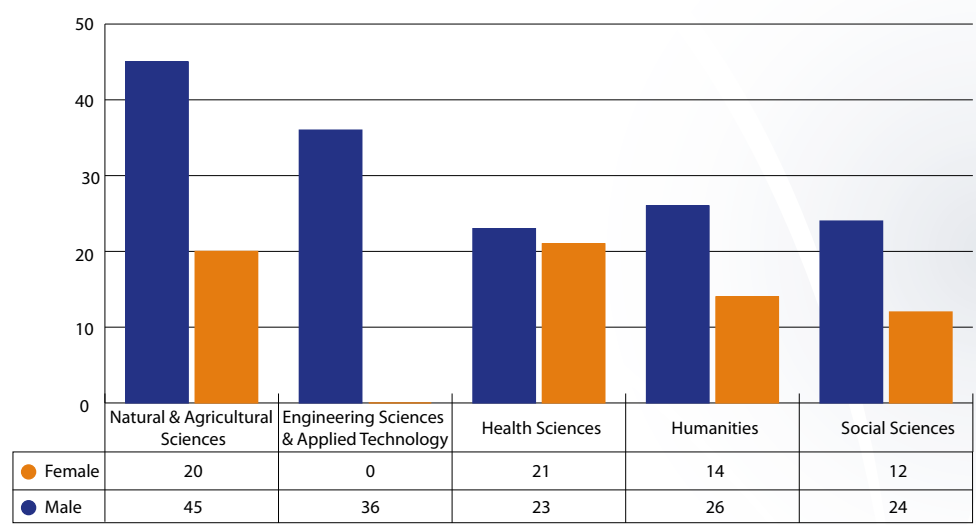


**FACT:**

**In 2005,  
0% NRF-  
rated female  
representation  
in Engineering  
Sciences  
& Applied  
Technology**

The majority of NRF-rated researchers in 2005 were concentrated in the Natural and Agricultural Sciences. Female NRF-rated researchers were most visible in the Health Sciences and Natural and Agricultural Sciences. The biggest proportion of male rated-researchers were in the Natural and Agricultural Sciences and Engineering Sciences and Applied Technologies. Engineering Sciences and Applied Technologies was the only field with no female representation.

**NRF-RATED RESEARCHERS BY SEX AND BY SCIENTIFIC DOMAIN (2005)**

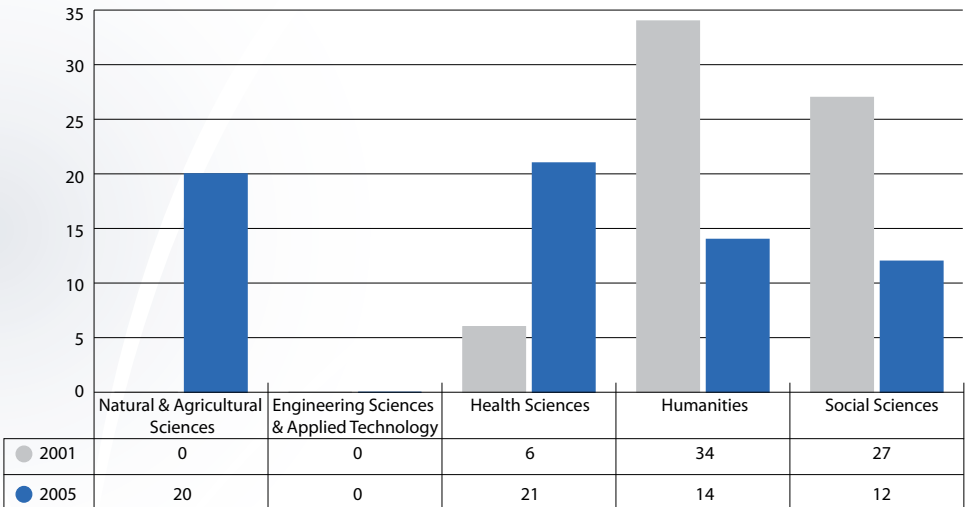


# FACING THE FACTS

The number of female rated-researchers in the Natural and Agricultural Sciences and Health Sciences has increased substantially since 2001 (with 20 and 15 researchers respectively). The number of rated researchers in the Social Sciences and Humanities declined over the same period (with 15 and 20 respectively). There were no female NRF-rated researchers in the Engineering Sciences and Applied Technologies in either 2001 and 2005.

**FACT:**  
71% more female NRF-rated scientists in Health Sciences in 2001 than in 2005

FEMALE NRF-RATED RESEARCHERS BY SCIENTIFIC DOMAIN (2002 AND 2005)





## CONCLUSIONS

The participation of the South African women as Science, Engineering and Technology (SET) postgraduate students over the past half a decade has greatly improved. The challenge is that although the numbers are steadily increasing, in terms of the level of study and broad field, women are still the minority particularly at the upper postgraduate level (Masters and Doctoral). The number of enrolments and graduations of Black women are increasing but still seen as the minority when compared with the majority proportion (57%) of white women.

The participation of professional female R&D personnel has also increased in the SET business and higher education sectors and science councils between 2003 and 2005. However, the public sector employs the majority of R&D female personnel but largely at the lower employment ranks. In the higher education, female representation is also limited in the engineering sciences and applied technologies.

In terms of publishing, female scientists are by far the minority e.g. female publishing scientists have only contributed a quarter of all outputs produced by South Africa over the last five years. There has been an improvement in terms of funding for upper postgraduate level and research grants awarded to female researchers. What is also pleasing is that the majority of scholarships and grants awarded were in the fields of natural and agricultural sciences as well as engineering sciences and applied technologies. But in terms of the National Research Foundation (NRF) rating, women are still far behind, but such inequity is being addressed as women represent the majority of researchers in the category L.

In the light of the above challenges, the following areas, including most of those recommended in the earlier version of Facing the Facts (2004), do warrant further interventions:

- Generating consistent and reliable sex disaggregated statistics on public SET sector;
- Undertaking initiatives that reduce sex-based discipline choices (for men and women) and promote the career advancement of women in academia and public research institutions;

## FACING THE FACTS

- Addressing the low publication rates of women in SET, and their academic advancement;
- Redressing the inequality distribution of public resources;
- Promoting “gender responsiveness” research in South Africa;
- Continuing to fast-track female enrolments and graduates particularly at the upper postgraduate level (Masters and Doctoral); and
- Improving existing gender policies and implementing them to ensure that equitable number of women, with emphasis on African and other women of colour, also participate at the higher academic levels and employment ranks.









## **ABBREVIATIONS AND ACRONYMS**

CeSTII	Centre for Science, Technology and Innovation Indicators
CREST	Centre for Research on Science and Technology
DOE	Department of Education
DST	Department of Science and Technology
EMIS	Education Management Information System
FTE	Full-time equivalent
HEMIS	Higher Education Management Information System
HSRC	Human Sciences Research Council
IF	Innovation Fund
NACI	National Advisory Council on Innovation
NRF	National Research Foundation
NSFAS	National Student Financial Aid Scheme
MRC	Medical Research Council
R&D	Research and Development
SET	Science, Engineering and Technology
SET4W	Science, Engineering and Technology for Women
THRIP	Technology and Human Resources for Industry Programme



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