GENDERA Gender Debate in European Research Area

EUROPEAN CONFERENCE ON GENDER AND INNOVATION

MAXIMISING INNOVATIONPOTENTIAL THROUGH DIVERSITY IN RESEARCH ORGANISATIONS

Women in Knowledge Triangle

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  "Meta Analysis of Gender and Science "

"The 21st Century will be a time of rapid innovation and technological change that will be spurred on by the grand challenges that we face, including climate change and the demands of an ageing society."

Hermann Hauser, "The Current and Future Role of Technology and Innovation Centres in the UK"

Will there be a substantial role to play for Women?

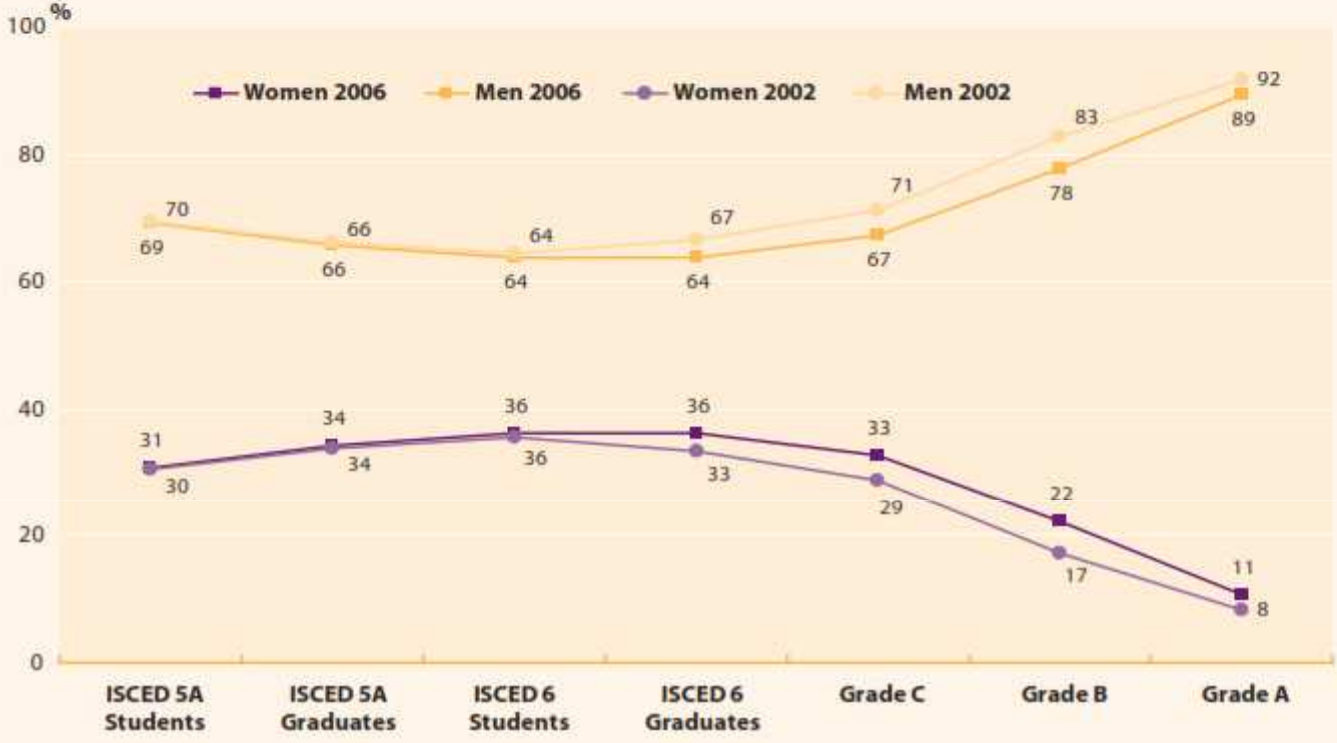
Introduction Women in HE

Gender inequality issue is a problem which is as old as human history and we have reasons not be overoptimistic in our expectations when we remember that women were accepted to colleges and universities only 150 years ago.

We should be patient and persistent about reaching the substantive improvements that we seek. One can hope that in an era of accelerating change, gender mainstreaming will eventually come to be actualized

- Women now constitute about 50% of first degree students in many countries all over the world (Massification)
- There are considerable variations in the proportion of women students between disciplines (Horizontal Segragation)
- The percentage of full professors who are women is very low worldwide, for the most part, below 15% (Vertical Segregation)

Figure 3.2: Proportions of men and women in a typical academic career in science and engineering, students and academic staff, EU-27, 2002/2006



Source: Education Statistics (Eurostat); WiS database (DG Research)

Exceptions to the reference year (s): **ISCED 6 students 2002**: RO (men 2003), SI (men 2005); **WIS 2006**: ES (2007), MT (2004), PT (2003), SI (2007), SK (2007), FI (2007); **2002**: IE (2004), FR (2000), LT (2005), NL (2003), UK (2003)
Data unavailable: **ISCED 6 students 2002**: DE, FR, LU, NL, SI (Women); **WIS 2006**: BG, EE, EL, FR, LV, LU, HU, RO, IE (Grade A); **2002**: BG, EE, EL, ES, LV, LU, HU, RO, IE (Grade A)
Break in series: CZ (2005)
Provisional data: ES
Data estimated: EU-27 (by DG Research) for WiS, ISCED 6 students, SI

Head count (Grades A, B, C)
NO: before 2007 biannual data

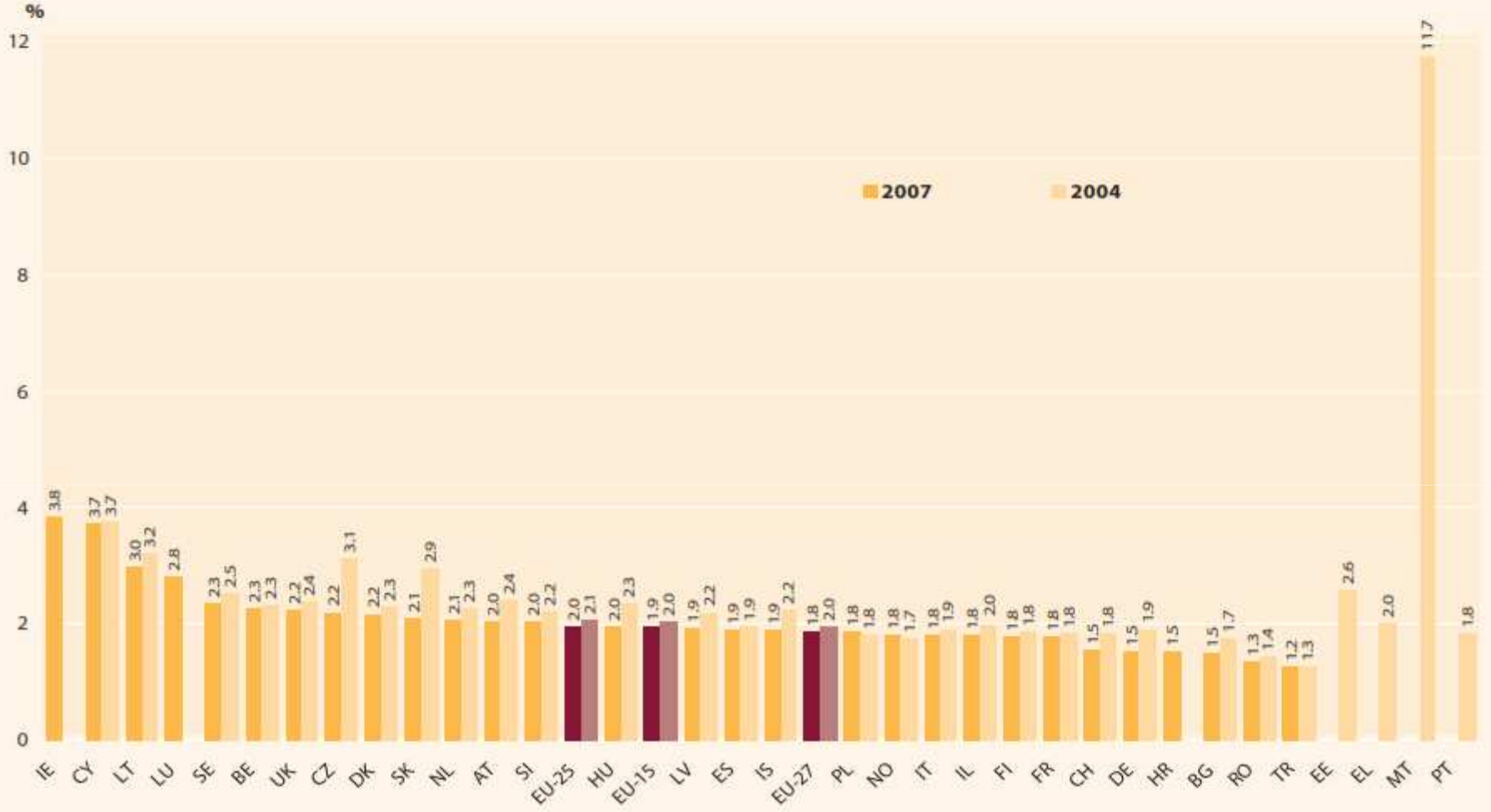
Definition of grades:

A: The single highest grade/post at which research is normally conducted.
B: Researchers working in positions not as senior as top position (A) but more senior than newly qualified PhD holders.
C: The first grade/post into which a newly qualified PhD graduate would normally be recruited.

ISCED 5A: Tertiary programmes to provide sufficient qualifications to enter into advanced research programmes & professions with high skills requirements.
ISCED 6: Tertiary programmes which lead to an advanced research qualification (PhD).

SET fields of education = 400 Science, maths and computing + 500 Engineering, manufacturing and construction.
SET fields of science = Engineering and Technology + Natural Sciences.

Figure 3.5: Glass Ceiling Index, 2004/2007



Source: WiS database (DG Research); Higher Education Authority for Ireland (Grade A)

Exceptions to the reference year (s): **2007** HR: 2008; UK: 2007/2006; DK, IE (except for grade A: 2002-2003), FR, CY, LU, AT, IL: 2006; **2004** PT, NO: 2003; IL: 2001; EL: 2000
Data unavailable: **2004**: LU, IE, HR; **2007**: EE, EL, MT, PT; Grade C unavailable for BG, RO (included in B)
Break in series: CZ (2005)
Provisional data: ES
Data estimated: EU-27, EU-25, EU-15 (by DG Research), SI

Head count
Some differences exist in coverage and definitions between countries
Country with small numbers of academic staff: CY, MT, LU, IS
NO: before 2007 biannual data
Data for Ireland on Grade A professors does not include the Institutes of Technology

Mediterranean Basin

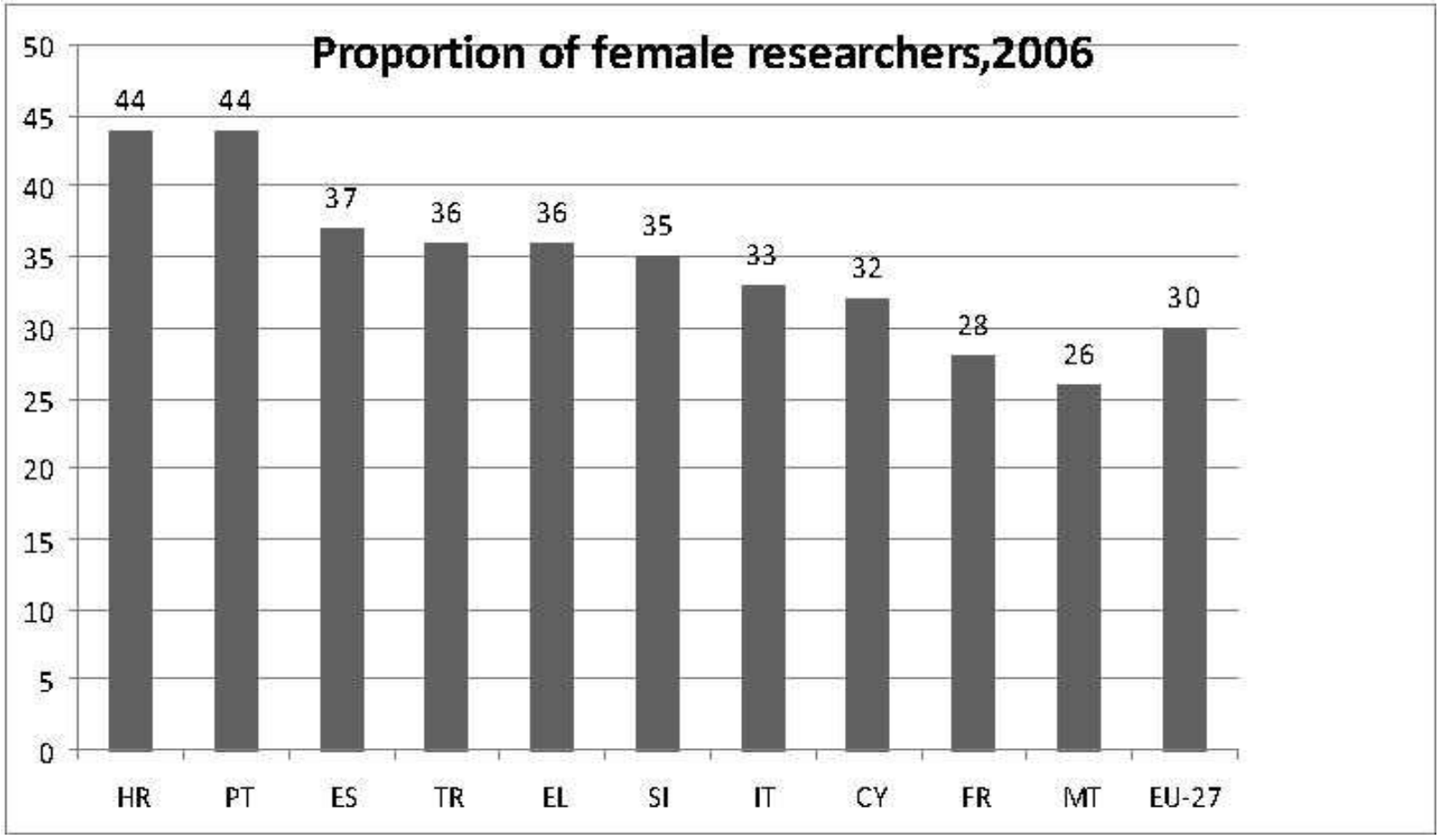
We have carried out a pilot study on the female researchers in the EU(MS+AC) Mediterranean HEA: Portugal, Spain,France, Italy, Malta, Croatia, Slovenia, Greece, Turkey and Cyprus.

We have aimed to map the situation of female researchers with special regards to gender differences in research careers and critical areas where women are underrepresented.

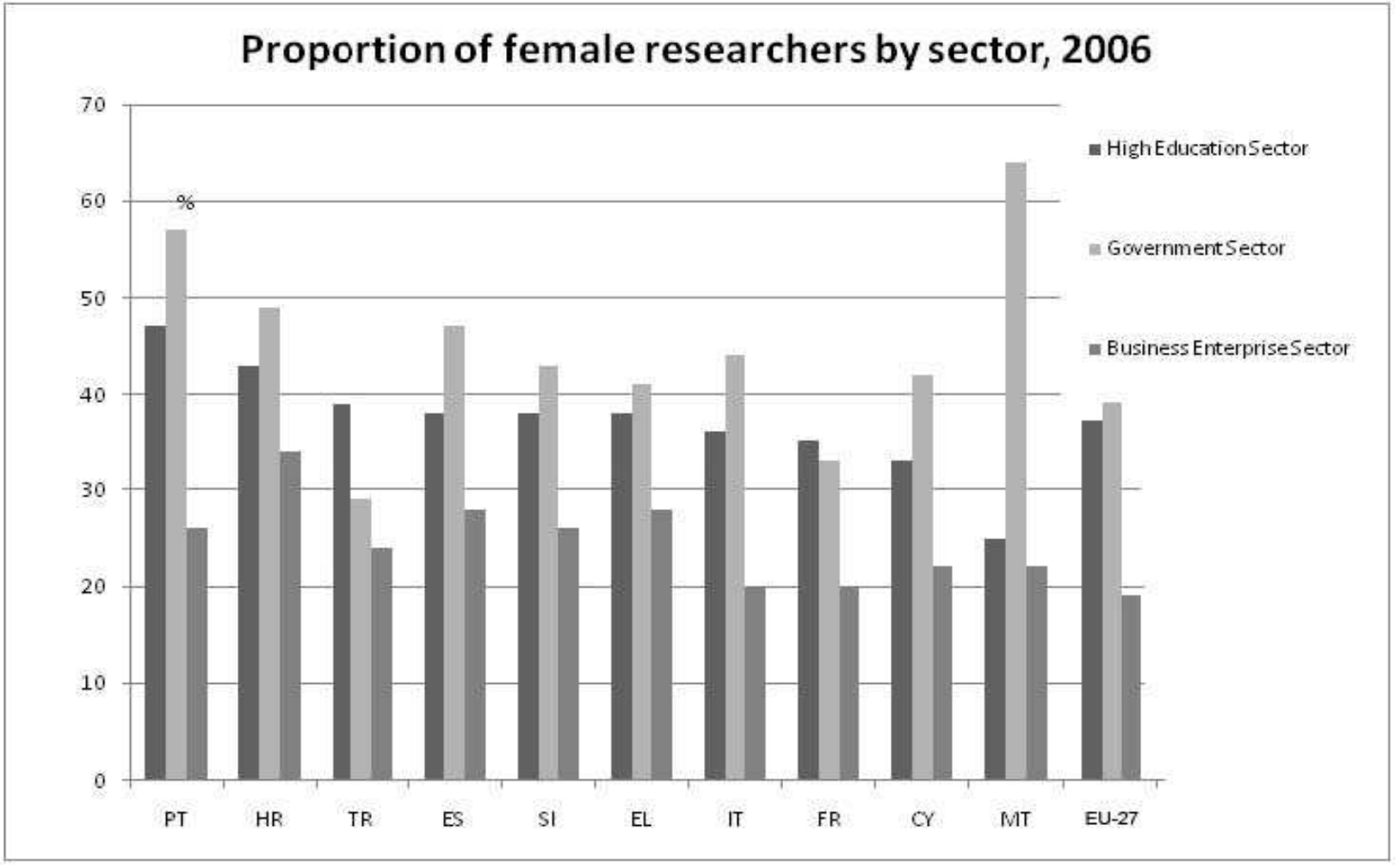
We have observed the important variations among the Mediterranean countries in this underrepresentation and the peculiarities observed in SET.

Tan, M., Saglamer,G., Atalay,O., 2011 , Women in Science, Engineering and Technology (SET) in Mediterranean Basin, SEFI Annual Conference Lisbon

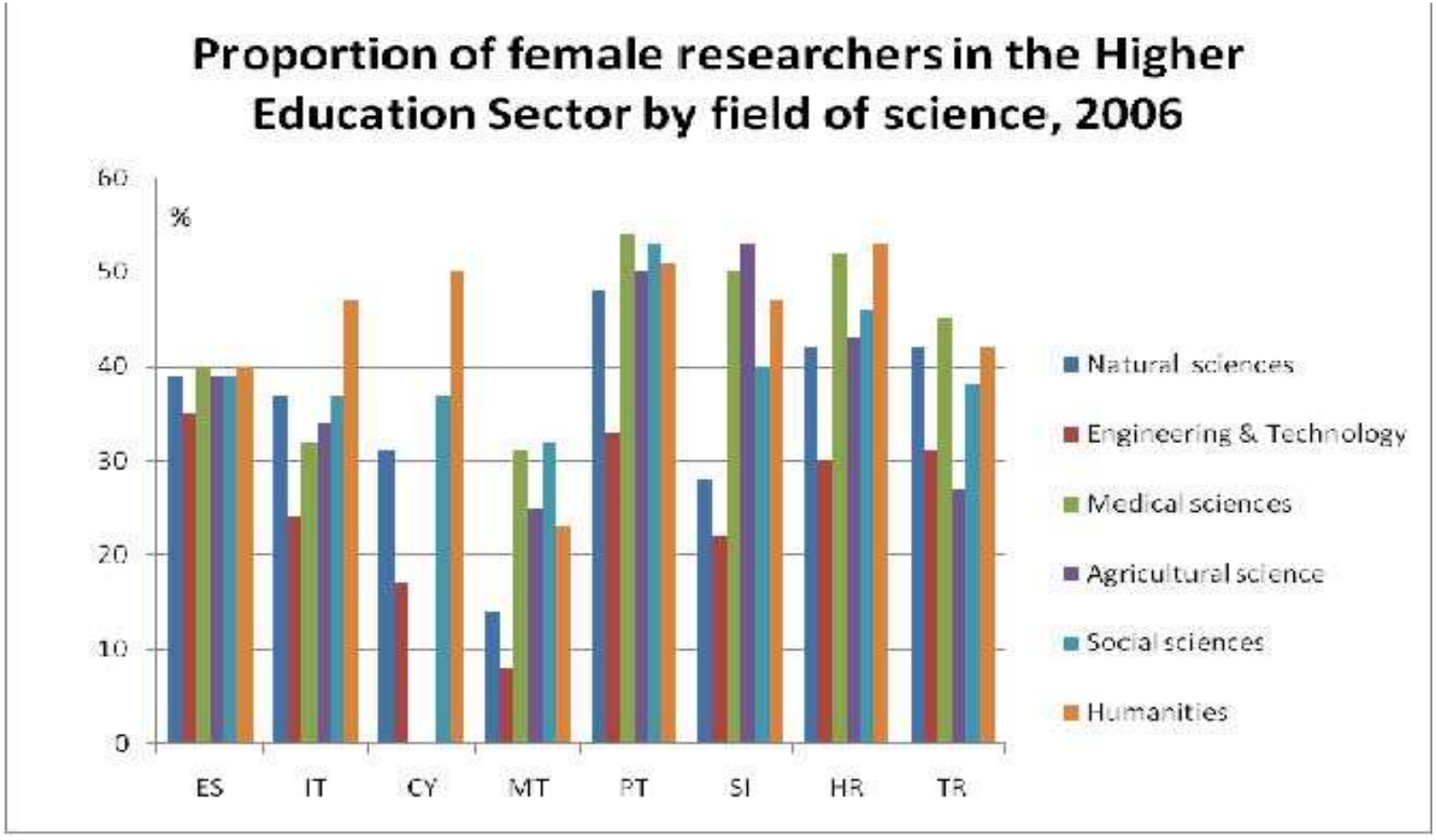
Women in Research



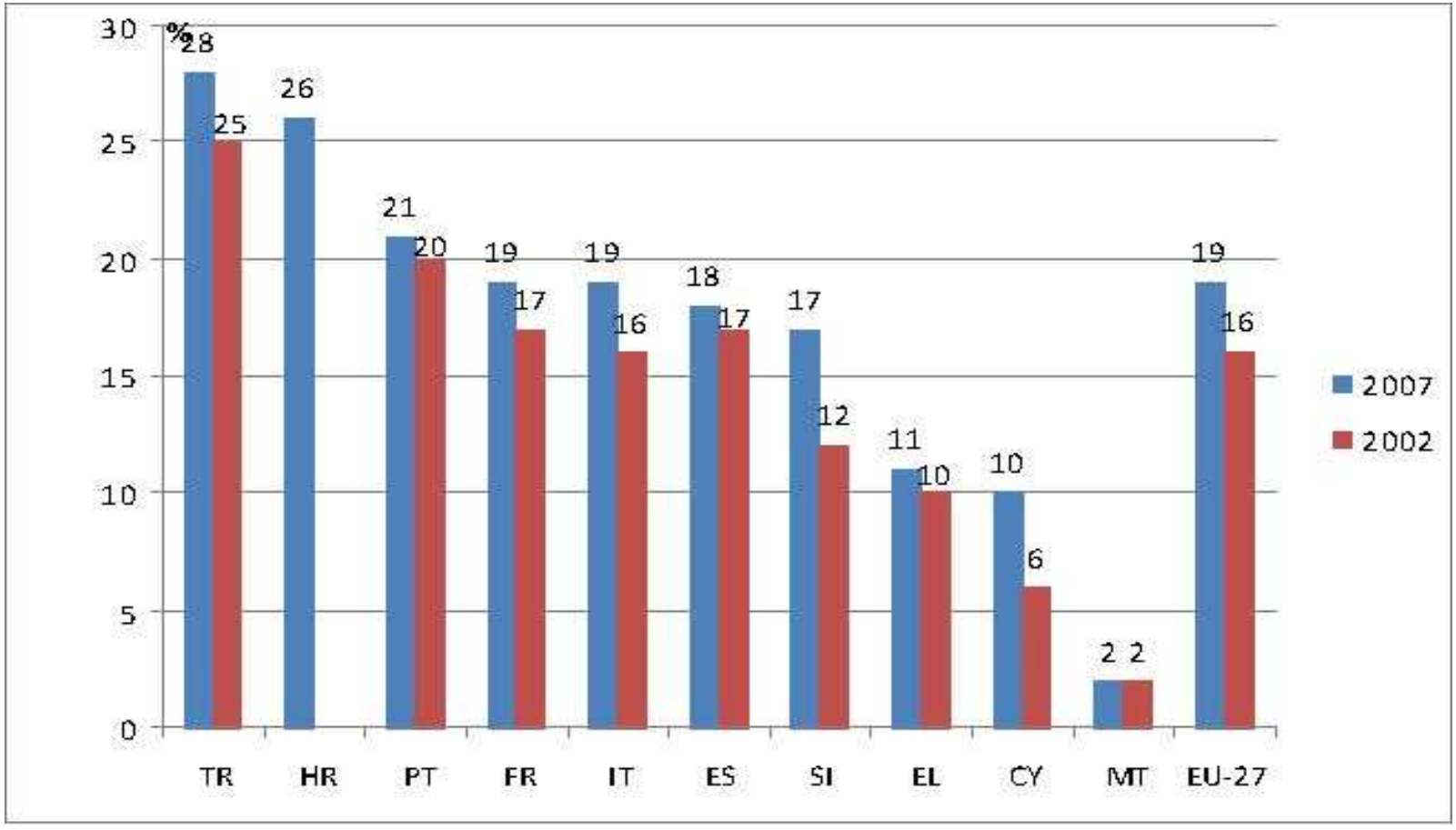
Women Researchers by sector



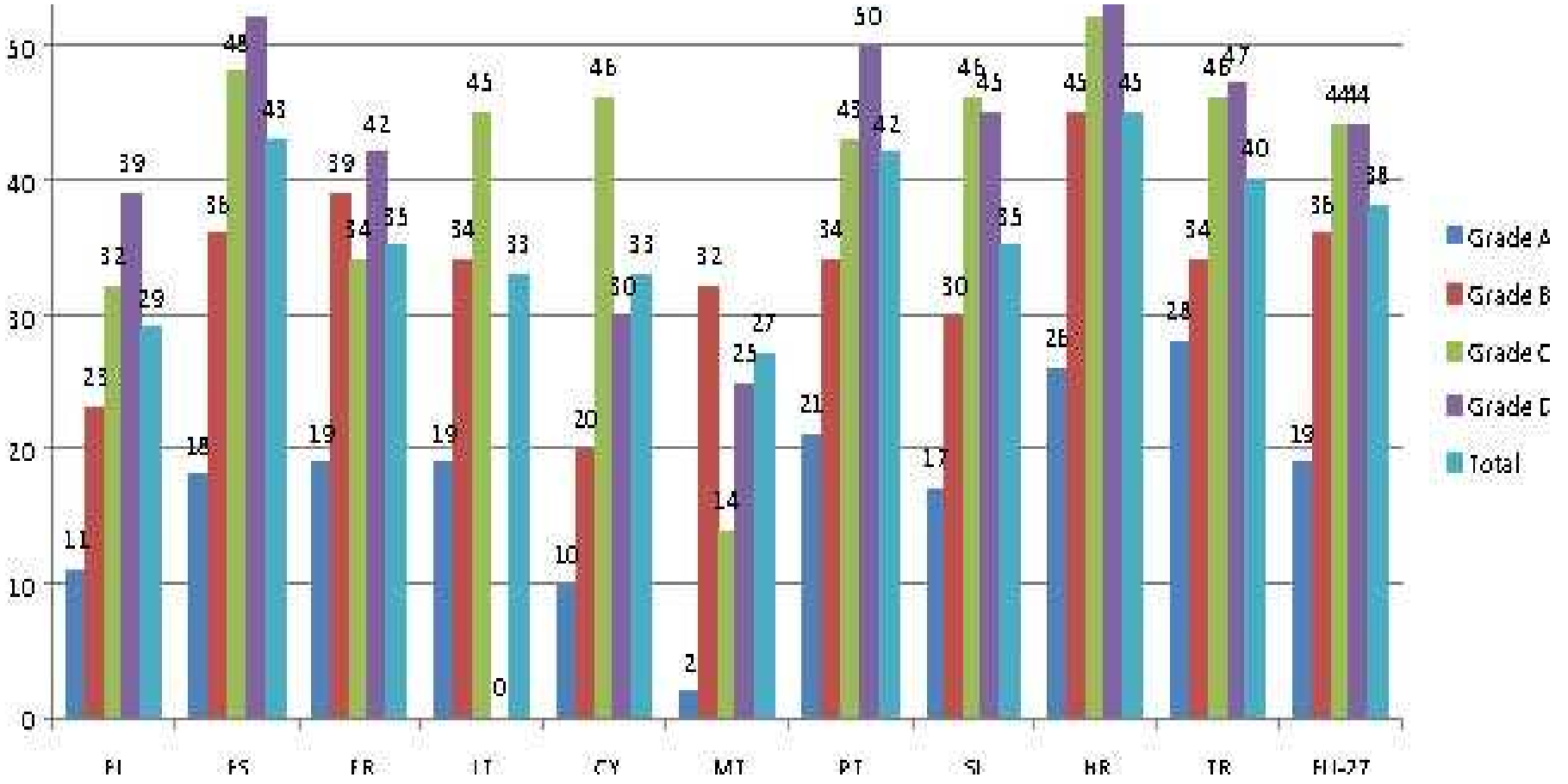
Women researchers in HE Sector



Proportion of Women in Grade A Position 2002-2007



Proportion of academic staff by grade and total 2007



Turkish Case

Proportion of Women Academics 2003-2010

	Prof.	Assoc.Prof	Asst. Prof
• 2003-2004	25.64	32.82	30.20
• 2004-2005	26.54	31.67	31.15
• 2005-2006	26.59	31.43	32.13
• 2006-2007	27.12	30.99	33.15
• 2009-2010	28.00	34.00	46.00

Leaking pipelines

	Sweden	Turkey
• PhD degrees	50%	42%
• First academic employment	41%	33%
• Associate professors	38%	31%
• Professors	20%	27%
• **Rectors:**	**45%**	**8%**

•

Ullenius, 2008., Saglamer, 2008

Female Representation in Computer Science

- An important fact has been outlined on the Male "Overrepresentation Factoring" in computer science (Ingra Kiderra, 2005).

- According to the research which has been conducted at the University of California, Turkey has the minimum

- **"Male Overrepresentation Factor" (1.79)** among 21 countries (Australia, Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Korea, Netherlands, New Zealand, Norway, Slovakia, Spain, Switzerland, Turkey, United Kingdom, United States).

ITU Case: Proportion of Female Academics

	94-95	99-00	04-05	09-10
•Professor	16%	20%	29%	32.0%
•Assoc.Prof	31%	35%	36%	41.6%
•Assist.Prof.	28%	38%	46%	38.6%
•Research Assist.	20%	35%	37%	44.7%
•Total	28%	31%	36%	39%

Saglamer, 2008

ITU Case: Proportion of Female Graduate Students

Master Degree Students

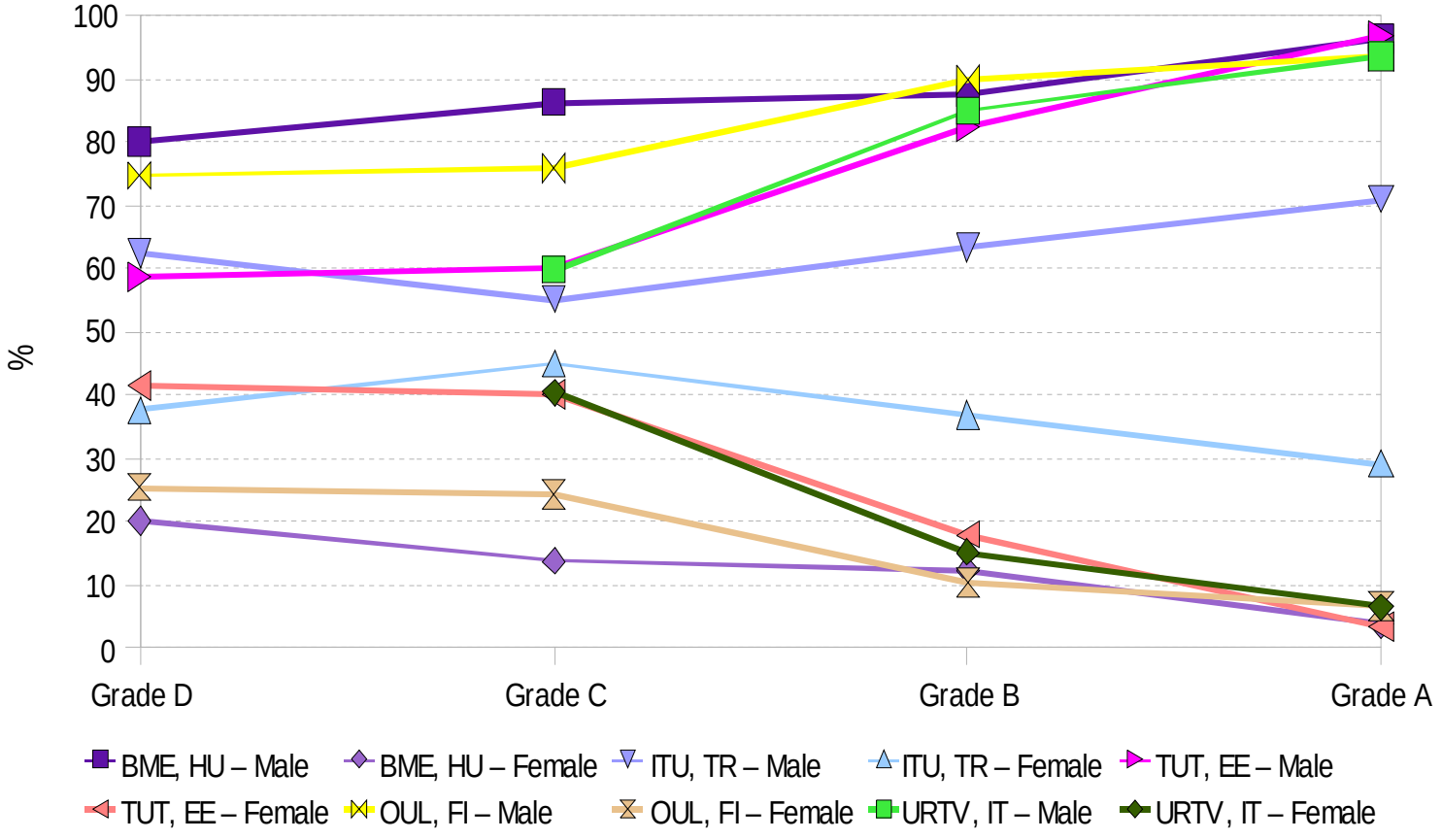
2010 Female : 1810 (40.6%) Total : 4458

PhD Students

2010 Female: 815 (41.6%) Total : 1961

Hierarchical structures

Careers at the faculties of engineering, (2004/2005)



Some Facts about Success Rates

- Female Students Ratio %30 in 2008-2009
- Students average grades in 2008-2009
  - Autum Term 2.60(F) 2.12(M)
  - Spring Term 2.54(F) 2.06(M)
- Top 3 in Graduations in 2008-2009
  - First %39 Female
  - Second %52 Female
  - Third %40 Female
  - **Total %44 Female**

Proportion of Female students in HE Turkey 2010

44% of total HE students are Female

46% of total graduating students are Female

49% of total graduate programme students are Female

Arı Teknokent R&D Building

	ARI TECH	TOTAL	ARI TECH%
PATENTS	111	235	47%
Trademarks	116	314	37%
R&D Budget (TL)	86.833.435	190.730.820	45%
R&D Income from	67.927.991	79.468.810	85%
Export ($)	118.287.712	243.187.140	49%

Resource: T.C. Cumhurbaşkanlığı Devlet Denetleme Kurulu, 4691 sayılı Teknoloji Geliştirme Bölgeleri Kanunu Uygulamalarının Değerlendirilmesi ile Uygulamada Ortaya Çıkan Sorunların Çözümüne İlişkin Öneri Geliştirmesi, EK 1 İstatistiki Bilgiler Grafikler

ITU - ARI Technocity

ARI Technocity hosts 78 R&D companies

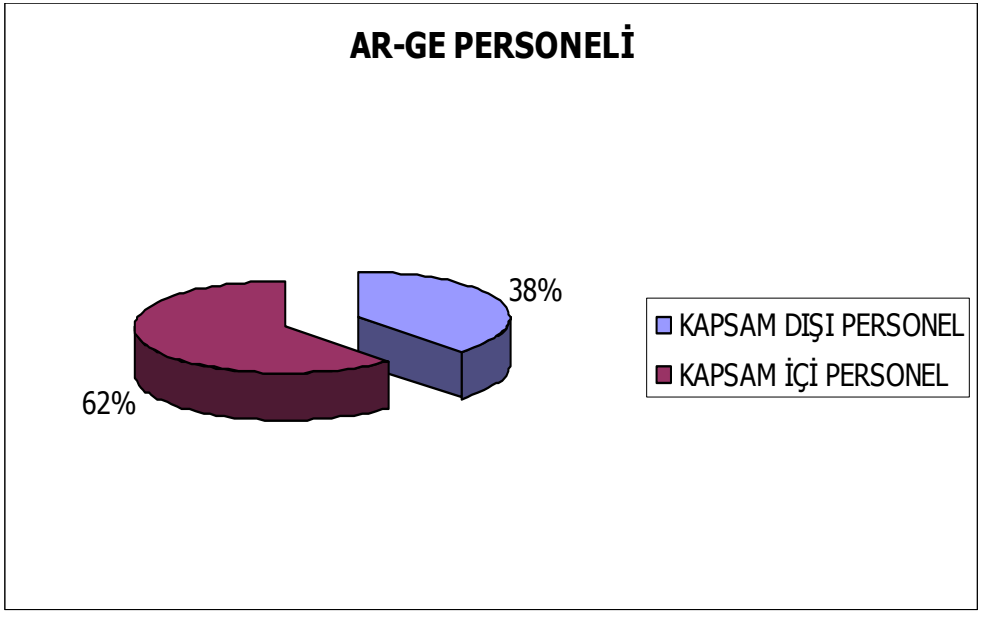
5 R&D company have women CEO among 78

Total R&D staff 2648

657 Women

Researcher 1990

494 Women



Some Observations

- The proportion of female students at every level of HE keep increasing
- Female students's interest on SET is also increasing but slower than the increase in HE in general
- Succes rates of female students are higher than males in many countries

- BUT……

- Female students tend to concentrate on certain fields of study areas
- Promotion of Female academics is a leaky pipeline
- Female researchers have less ambition to be in leading positions and credits that they achieve usually go to male boss
- EO policies having marginal effect in terms of access and employement- academic merit
- Lack of strong committment for equity policies in the institution

How to maximise innovation potential

Is it possible ?

"Maximising innovation potential through diversity in Research Organisation"

YES possible if we are able

- To decide to use human capital efficiently and effectively
- To prepare the conditions for this transformation (legal, financial, social&cultural)
- To create gender friendly environment
- To remove barriers for every kind of segragation
- To empower and strenghten the capacity of women to be able to compete in equal conditions with self confidence

"Meta-analysis of Gender and Science Research"
Topic Report: Policies towards Gender Equality in Research

Setting the Scene

The meta-analysis is based on the entries in the Gender and Science Database classified under "Policies towards gender equality in research". The available 1296 abstracts in English provided a first orientation for in-depth study of selected texts.

Three different large policy fields in science and technology; have been distinguished;

1. research policies ,
2. innovation policies.
3. human resources policies

Main Trends i;

- Positive Actions
- Gender Mainstreaming
- Evaluation of Measures

Historically there has been an evolution from positive actions toward mainstreaming.

Methodology & Main Trends

The three thematic areas;

- Advancing science careers
- Science management and reform
- Gender dimension in research and HE

The topics in thematic areas are classified under 8 headings

- horizontal sg.,
- vertical sg.
- pay gap,
- stereotypes and identities,
- science as labour activity,
- scientific excellence,
- gender dimension in research content
- policies towards gender equality in research content

Advancing Women's Science Careers

Policies and programmes for supporting women in science career;

- Career Training and Development
- Qualifications Stipends,
- Scholarships&Positions
- Networking and Mentoring
- Measures for Work-life Balancing

Drop-out rates at Ph.D level is very high

Drop-out rates vary in different fields, different sectors, different institutions, diffrent countries

Advancing Women's Science Careers
Concluding Remarks

1. The impact of equality measures depends on the historically grown specific culture and disciplinary requirements in place.
2. Career development for women scientists needs to be combined with changing the science culture at large and should not be modelled according to male shaped job and life patterns.
3. The institutional level of involvement emerged as a key aspect for the success and real impact of policy measures. This is apparent in the way women were able to participate in the decision making process.
4. There is a need to rethink the linear model of the science career. Despite the fact that career breaks are penalized in science, there might be untapped possibilities and potentials for women entering science.

Science Management&Reform

Gendered aspects of institutional reform include;

- Legislation
- Equality Officers, Committees&Observatories
- Quotas
- Targets, Incentives&Gender Budgeting

Quotas appaer as a very effective instrument to increase the number women.On the other hand, they are seen as interfereing with the supposedly objectivity and neutrality of scientific knowledge as well as being in conflict with justice arguments.

Direct positive measures such as women's quotas for full professorship or earmarked stipends for female candidates etc. Often are disqualified as inferring with neutrality and meritocracy of science.

A quite cotradictory picture emerges from the rewieved literature; The new steering instruments as target setting, audits, quality cotrol and performance measures were described as disadvanttegous for women academics

Gender Dimension in Research & HE

For the Integration of gender into all aspects of education and research;

- **Reforming teaching methods and rethinking curricular content**
- **The organisation of the educational setting**
- **Different model of science and knowledge production**

"Gender at large becomes here tied to a process of modernisation of HE and Research not only in the sense of uncovering male power structures but also in terms of improving the quality and diversity of knowledge"

Summary of Major Gaps/ Recommendations

The individual gaps pertaining to each thematic section have been grouped according to the three topics;

- **Need for common quality standards for evaluation**
- **Need for theory and interdisciplinarity**
- **Need for research on long-term effects**

Recommendations

"The key challenge is not to change women but, on the contrary, to change the culture of science and research. This change would concern not only the definition and assessment of excellence but also issues related to work-life balance."

In the end, the new EU perspective about gender and science involves the idea that gender policy is not only made by regulations and legal changes but mostly by leadership and committement to change structures and cultures

Thank You

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