

GenderInSITE

Gender in science, innovation, technology and engineering



Enabling policies: capacity building in S&T and gender in Brazil

Alice Abreu, Director

Gender Summit 08 North and Latin America
Mexico City, 28th and 29th April 2016

Women in higher education

Brazil

- ❖ There are now more women than men enrolled at universities and they are also the majority of those concluding their courses.
- ❖ since early 2000, also the majority of MSc and PhD graduates.
- ❖ their participation in engineering, mathematics, physics and computer sciences larger than in many developed countries.
- ❖ What are the policies that have enabled this exceptional situation that does not occur in more than three countries worldwide?

Brazilian S&T system – focus on capacity building

Crucial organizations, created in 1951:

- ❖ CNPq (National Council for Scientific and Technological Development) and of
- ❖ CAPES (Coordinating Agency for Training of Higher Education Personnel)

The first aimed at financing research and supporting individual researchers and the second sought to promote capacity among university teachers. The late 70s saw the establishment of the first graduate courses in the country, and soon CAPES assumed another important function related to the evaluation and quality control of the post-graduate system.

Brazilian S&T system – focus on capacity building

- The Brazilian S&T system grew significantly in the 80s (MCT 1985).
- In 2003, a Special Secretary for Policy for Women was created, with Ministerial status
- Today the S&T system today is strong with the highest investment-GDP ratio in Latin America, a well-funded Ministry of Science Technology and Innovation, and a significant presence in the international scene, standing at 13th position worldwide in refereed publications.

Capacity building

- ❖ Brazil has today 3.343 graduate programs in all scientific areas, of which 1.664 have PhD programs. In 2012, they graduated 42 thousand MScs and 12 thousand PhDs.
- ❖ Women are the majority of MSc graduates since 1998 and of PhDs since 2004. In 2008 women accounted for 54% of MSc and 51% of PhD graduates.(Box 1 chapter xx ppxx)
- ❖ An important observation is that education in federal and state universities is free of charges, both at undergraduate and graduate levels. These universities represent about 35% of the higher education institutions, but concentrate almost the whole research community of Brazil.

Capacity building

- ❖ The Brazilian capacity building effort has increased and diversified substantially from its starting point in the early 50s. Between CNPq and CAPES, both at federal level, and the state agencies, several different support mechanisms were put in place. They ranged from research funding granted through competitive call for projects, to a wide range of scholarships and fellowships supporting students and researchers at different levels of their careers.
- ❖ Level playing field:
 - Decentralization
 - Merit
 - Public funding

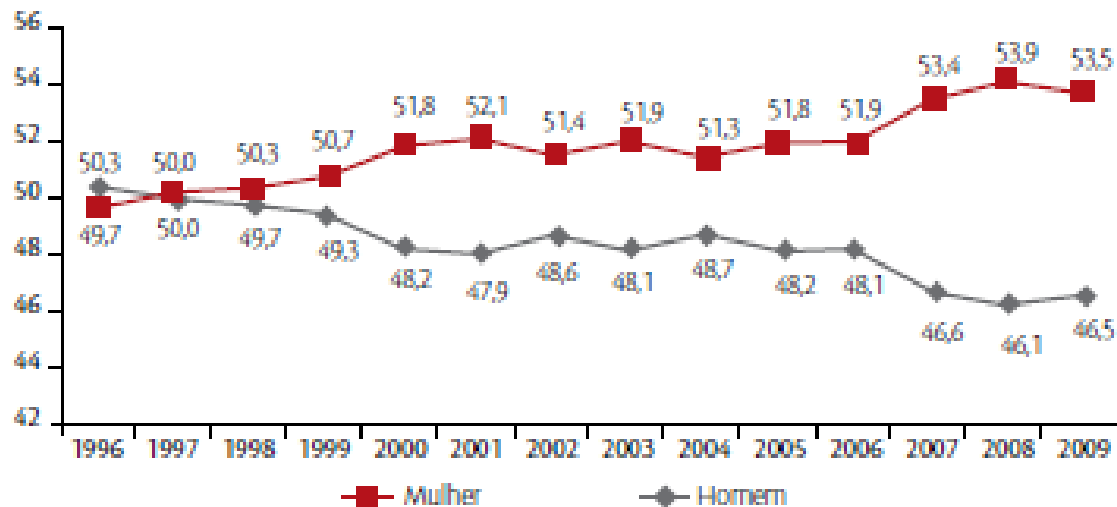
- ❖ Undergraduates *Scientific initiation* scholarships are granted to undergraduate students to work under the supervision of a lecturer in a research project. The scholarships are granted to the researcher that can then choose the student he wants to enroll in his project.
- ❖ Masters and PhDs scholarships are granted through graduate programs in which students are enrolled; in the programs considered *centers of excellence*, scholarships are available for all accepted students. Post-doc scholarships are granted at the national level.
- ❖ Senior Research Fellowships Finally, as a crowning support for the best scientists in the country, the CNPq grants, on a very competitive basis.

Brazil - Scholarships granted by CNPq and CAPES 2002 and 2012

Categories	2002		2012	
	Numbers	% women	Numbers	% women
CNPq				
Undergraduate (IC)	18 843	54	36 391	56
MSc (GM)	5 602	52	9 865	53
PhD (GD)	5 743	49	9 362	51
Post Doc (PD)	88	39	1 548	57
Senior Researcher (PQ)	7 765	32	9 940	35
CAPES				
MSc (GM)	13 054	NA	43 591	NA
PhD (GD)	10 180	NA	27 598	NA
Post Doc (PD)	179	NA	3 663	NA
Total	61 454		141 958	

MSc Titles Granted by Sex Brazil 1996-2009

Gráfico 2.2.16 Distribuição percentual dos títulos de mestrado concedidos no Brasil por sexo, 1996-2009

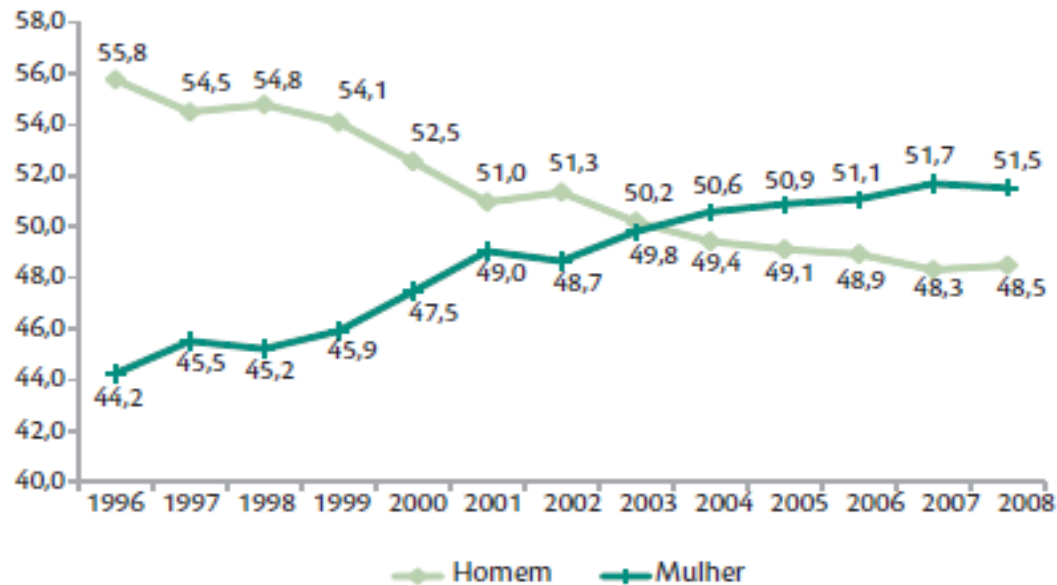


Fonte: Coleta Capes (Capes, MEC). Elaboração do Núcleo de RHCTI do CGEE.

CGEE – Mestres 2012

PhD Titles Granted by Sex Brazil 1996-2008

Gráfico 1.19. Distribuição dos doutores titulados no Brasil por sexo, 1996-2008

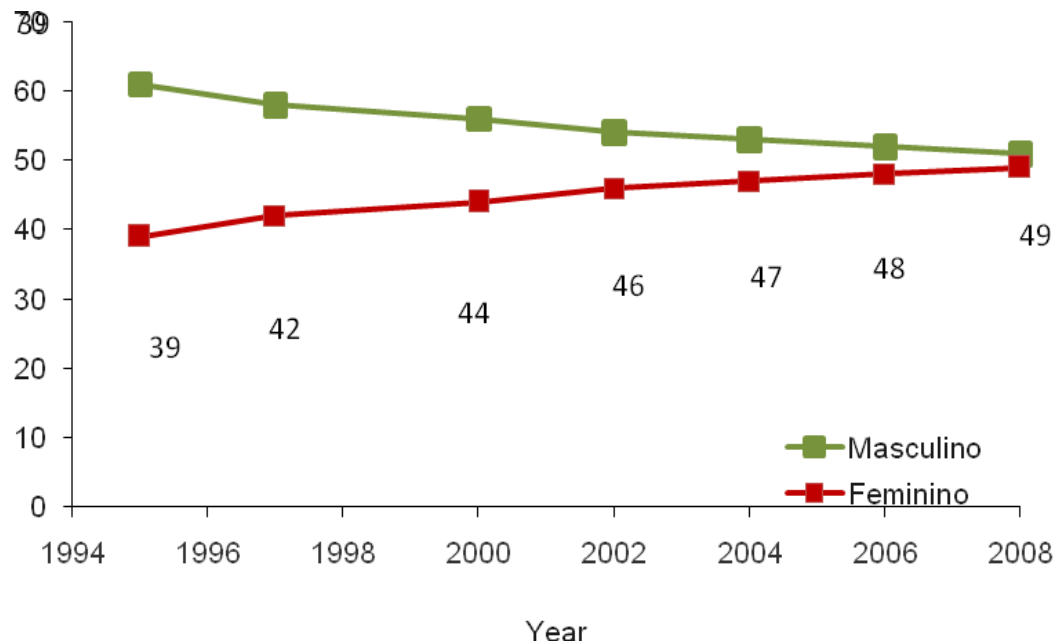


Fonte: Coleta Capes (Capes, MEC). (Apud gráfico 2.2.14 do capítulo 2.)

CGEE Doutores 2010

CNPq Census of Research Groups

Brazil - Researchers by Sex - 1995-2008



Data for 2010 and 2014 show women are now 50% of researchers

CNPq Census of Research Groups

Brazil - % of Women by Scientific Area - 2008

Scientific Area	% of Women
TOTAL	48,89
Engineering and Computer Science	27,31
Exact and Earth Sciences	33,73
Agrarian Sciences	37,86
Applied Social Sciences	47,69
Biological Sciences	53,29
Human Sciences	59,27
Health Sciences	60,40
Art and Linguistics	66,46

CNPq Census of Research Groups - 2008

Brazil - % of Women Leaders by Scientific Area

Scientific Areas	% of Women Leaders
Engineering and Computer Sciences	21,90
Exact and Earth Sciences	28,21
Agrarian Sciences	32,29
Applied Social Sciences	44,20
Biological Sciences	51,26
Human Sciences	55,44
Health Sciences	56,37
Art and Linguistics	66,49
TOTAL	44,52

CNPq scholarships by categories

Brazil 2002-2008

Scholarships in Brazil	% of women			
	2002	2004	2006	2008
Iniciação Científica- IC	54	54	55	57
Mestrado – GM	52	50	52	52
Doutorado – GD	49	49	50	51
Pós Doutorado - PD (1)	39	48	52	51
Produtividade em Pesquisas – PQ	32	33	33	34
Total	48	48	48	49
Number of scholarships	45.348	48.596	55.004	58.869
Scholarships abroad	% of women			
	2002	2004	2006	2008
Doutorado	37	41	32	28
Doutorado Sanduiche	51	52	43	50
Professor Visitante Junior/Senior	16	0	35	30
Pós Doutorado	40	35	29	37
Total	39	41	33	39
Number of scholarships	766	510	354	551

Fonte: CNPq/AEI (2.9.1-Sexo_Mod_PaisExt_0108_n°)

CNPq * Brazil 2001-2008 * Senior Research Fellowships by Categories - % of Women

Senior Research Fellowships Categories	% of Women							
	2001	2002	2003	2004	2005	2006	2007	2008
1A	22,3	22,1	22,9	23,8	23,2	23,0	23,0	23,6
1B	27,1	27,8	27,2	27,2	28,6	30,4	31,8	31,8
1C	28,0	27,8	28,6	29,3	30,0	30,6	31,6	32,0
1D	32,3	32,9	34,0	34,6	34,5	35,0	34,2	32,9
2	37,2	37,8	37,7	38,3	37,7	37,2	36,8	37,0
Total	32,1	32,3	32,5	33,4	33,3	33,4	33,7	33,8

CNPq – Brazil December 2009 -Composition of the Committees - % of Women by Scientific Areas

Scientific Areas	Total number of members	Number of Women	% of Women
Human and Applied Social Sciences	57	29	50%
Health Sciences	98	23	22%
Engineering, Exact and Earth Sciences	83	6	5%
Total	238	58	24%

Thank you

GenderInSITE
www.genderinsite.net

aabreu@genderinsite.net