

First Annual Gender Forum at Nazarbayev University
Challenges and Changes in Gender in Central Asia

**FROM MINORITY TO DIVERSITY:
CONTEXTUALIZING GENDERED INNOVATION**

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FIRST ANNUAL GENDER
FORUM

CHALLENGES AND CHANGES
IN GENDER IN CENTRAL ASIA

Nazarbayev University
June 13 (Thursday), 2019

Prologue

Trajectory

Milestones

Challenges

PROLOGUE

Helicopter

KAIST

Leaky
Pipeline

HELICOPTER

- Helicopter in a shop window
- Mathematical methods in social sciences



KAIST

- Established in 1971 as a fully government-funded graduate school for advanced research and education in science and engineering
- Benchmarked by universities of several developing countries for S&T driven fast-track modernization



Enrollment
(as of Feb. 2019)

10,289

Undergraduate **4,051** | Master's **2,691**
Joint M.S./Ph.D. **925** | Ph.D. **2,622**



Degrees Conferred
(as of Feb. 2019)

63,830

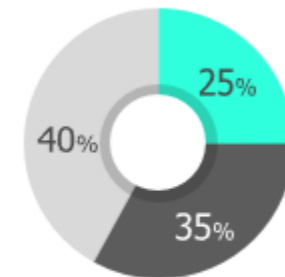
B.S. **18,018**
M.S. **32,783** | Ph.D. **13,029**



Faculty & Staff
(as of Feb. 2019)

1,132

Faculty **631**
Staff **501**



Budget
(as of 2019)






765
Million USD

● Research Grants ● Other Income (Donation, etc) ● Government Subsidy

KAIST

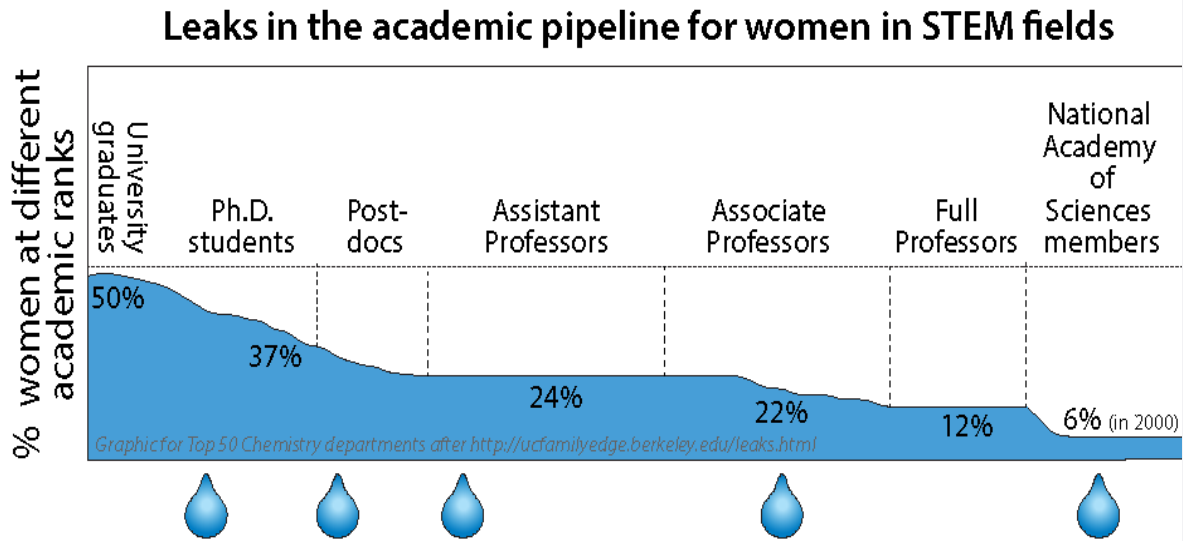
- So few women at the start (as students largely come from science high schools)
- Getting fewer and fewer

Year	2012	2013	2014
KAIST	19.8%	15.2%	18.4%
Science high schools	24.3%	23.0%	20.5%

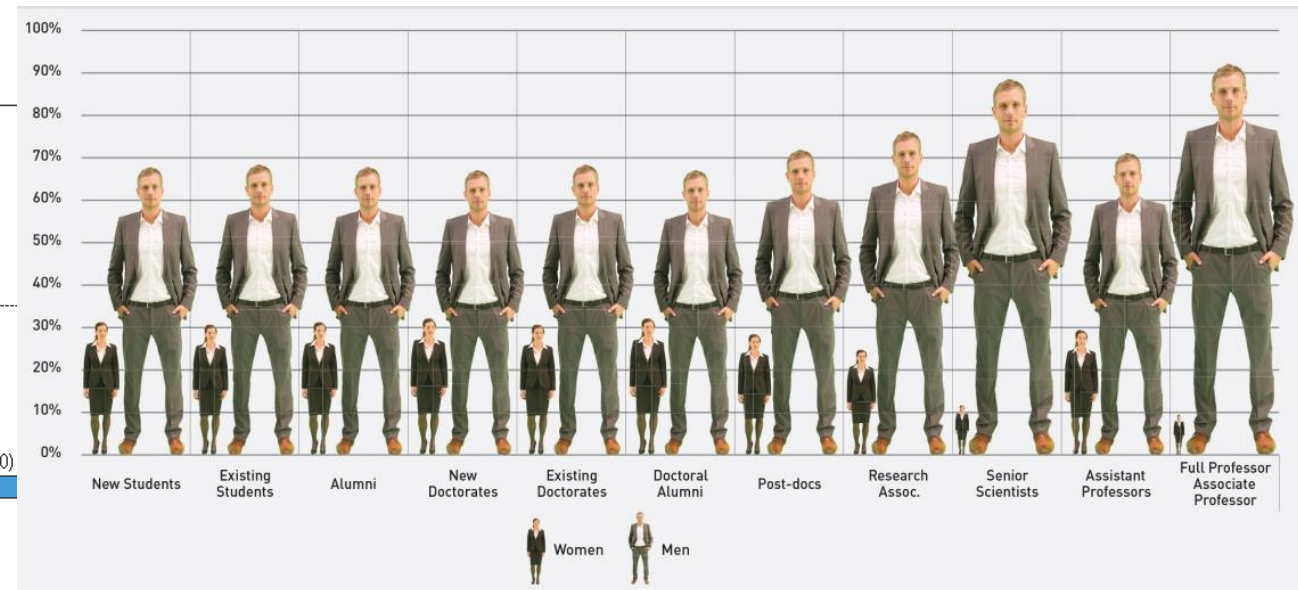
	11th	2018 The World's Most Innovative Universities
	1st	2016, 2017, 2018 Asia's Most Innovative Universities
	40th	2018 QS World University Rankings
	Nearly 25%	of Samsung's R&D workforce are KAIST graduates
	Nearly 20%	of all Korean universities' engineering faculty are KAIST graduates

LEAKY PIPELINE

- Inevitable encounter with a leaky pipeline



US National Science Foundation



ETH Zurich, *When Careers Run Up Against Stereotypes* (2013)

TRAJECTORY

Beginning

Evolution

Organi-
zations

Legal
Framework

BEGINNING

- (1995~96)
 - Daedeok Science Pre-school, Public Debate Session for the Utilization of Women Workforce in S&T, Workshop for Unemployed Women Scientists
- (1998~2000)
 - Policy Study for the Expansion of Knowledge-based Industry through the Utilization of Women in S&T, Planning Study for the Program Promoting Women Scientists, Women in S&T Database Construction by the Association of Korean Women Scientists & Engineers (KWSE)

EVOLUTION

2001	Launch of the Women in Science & Engineering (WISE) Program, Creation of the Woman Scientist of the Year Award, Analysis of Current Conditions of Women Workforce in S&T
2002	KWSE Policy Design for Fostering and Promoting Women Scientists and Engineers, Enactment of the Framework Act on Fostering and Promoting Women in S&T
2003	Establishment of KOFWST, Female Faculty Quota Policy, BIEN 2003
2004	Launch of the WATCH21 Program, First Five-Year Plan for Women in S&T, KWSE Science Camp
2005	Launch of the Annual Statistics on Women Workforce in S&T, Introduction of the Amore-Pacific Women Scientist Award (KOFWST)
2006	Construction of Women Evaluator Pool (KWSE)
2007	Introduction of Promotion Quota System for Women in S&T, Daedeok Science Nursery
2008	Introduction of the Special Officer for Women in S&T, KOFWST Korea-China-Japan Women Science Leaders Forum

EVOLUTION

2009	Second Five-Year Plan for Women in S&T, Award for Model Organizations for Employment Quota Policy, BIEN 2009
2010	Human Capital Development for Women in S&T (KWSE), Next-generation Leaders Forum (KOFWST)
2011	Merger of 4W into Korea Center for Women in Science, Engineering and Technology (WISET), Award for Future Talent (KOFWST)
2012	Analysis of Part-time Employees in Government Research Institute (KWSE), Selection of Regional and Local Program Operators (WISET), Launch of Women R&D Returners Program (WISET)
2013	WISET becoming a Judiciary Entity, Launch of a Women S&T Cooperative, BIEN 2013
2014	Third Five-Year Plan for Women in S&T, WISET S&T Talent Academy, Seoul Women S&T Returner Program, Launch of Gendered Innovation Forum, Long-term Roadmap for Women in S&T
2015	Asia-Pacific Gender Summit
2016	GISTER (Gendered Innovation in S&T Center) Establishment
2019	Fourth Five-Year Plan for Women in S&T

ORGANIZATIONS

Organization	Association of Korean Women Scientists and Engineers (KWSE)	Korea Advanced Institute of Women in Science, Engineering, and Technology (WISET)	Korean Federation of Women's Science & Technology Association (KOFWST)
Foundation	1993  <small>The Association of Korean Women Scientists & Engineers</small>	2013 	2003  <small>Korea Federation of Women's Science & Technology Associations</small>
Legal Status	Corporate Judicial	Judicial	Corporate Judicial
Mission & Identity	Expanding women S&T workforce	World-leading institution providing comprehensive support system for women in S&T with value creation	Policy development and recommendation for gender-balanced utilization of S&T workforce
Program Focus	Retention/Advancement	Recruitment/Retention/Advancement	Retention/ Advancement

LEGAL FRAMEWORK

- Three Basic Plans for the Fostering and Promotion of Women in S&T completed and the Fourth Plan beginning this year

First
(2004~08)

- S&T-centered society through the promotion of women in S&T

Second
(2009~13)

- Realizing S&T-centered society led by women in S&T

Third
(2014~18)

- S&T and the creative Economy led by **both genders**

LEGAL FRAMEWORK

- Policy goals set in each plan

First Plan

- Maximizing the utilization of women workforce in S&T
- Enhancing the competitiveness of women in S&T through capacity building
- Elevating the status of women in S&T by increasing their developmental potentials
- Promoting balanced S&T development through the utilization of women in S&T

Second Plan

- Expanding highly qualified women in S&T
- Promoting the utilization of women in S&T
- Strengthening the infrastructure for the fostering and promotion of women in S&T

Third Plan

- Capacity building (job placement rate of 60% for female grads in S&T, 15% for the portion of women PIs)
- **Balance** (20% of R&D jobs for women in S&T, 60% of the economic participation rate for women in S&T)
- **Diversity** (10% for the portion of women S&T administrators to 10%, R&D gender analysis guideline)

LONG-TERM ROAD FOR WST POLICY

- First bottom-up effort of Korean women in S&T represented in various S&T organizations to canvass the current landscape of policy for women in S&T and to identify key issues to be addressed in the long run.
- Strong emphasis on participatory deliberation among women in S&T rather than top-down formulation of policy tasks
- Derived of 27 tasks
 - Grouped into 16 major policy areas under 6 strategic approaches
 - Sixteen out of 27 being newly identified
 - Phased in three implementation cycles

ROADMAPPING PROCESS

Member Workshop
(2014.2.7~8/
2.13~14)



Second Forum
(2014.3.26)



Fourth Forum
(2014.5.22)



Public Hearing
(2014.7.15)

First Forum
(2014.2.27)

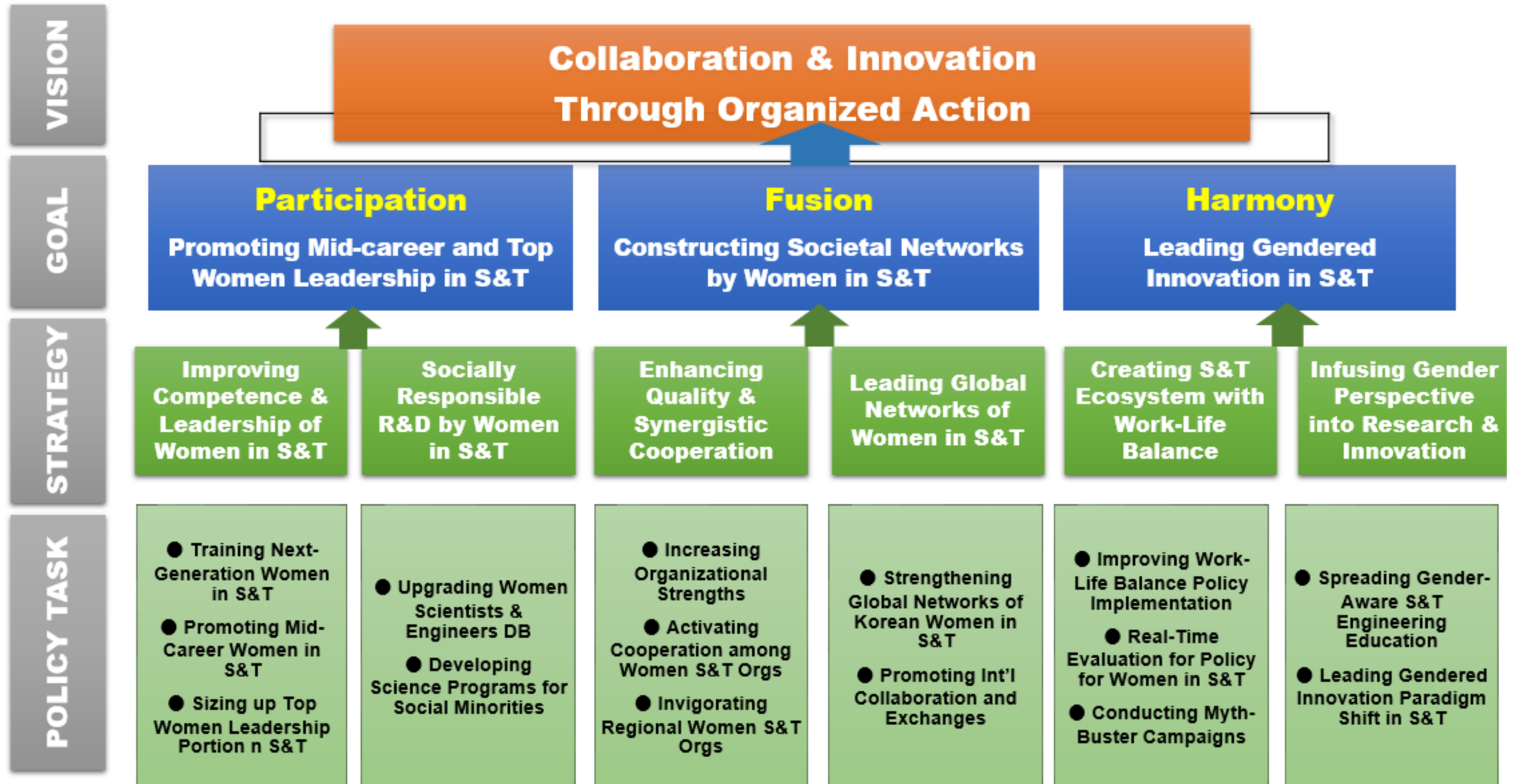


Third Forum
(2014.4.22)



Member Workshop
(2014.6.20~21)





LONG-TERM ROADMAP FOR WST POLICY

Growth (2014~2017)

- Training of Next-Generation Women in S&T
- Diffusion of Work-Life Balance Program and Culture
- Social Contribution Programs
- Quality Upgrading of Women S&T Organizations
- Collaboration with Korean Women S&T Groups Abroad

Take-Off (2018~2020)

- Increasing Leader Positions among Women in S&T
- Upgrading Work-Life Balance Programs
- R&SD* Programs under the Initiatives of Women in S&T
- Promoting Collaborative Projects among Women S&T Organizations
- Expanding Global Network of Women in S&T

Maturity (2021~2023)

- Reinforcing Women Leadership and Representation in S&T
- Comprehensive Work-Life Balance System
- Leading Policymaking and Agenda-setting for Women in S&T
- Constructing Global R&SD Platform of Women in S&T
- Leading Global Network of Gender Innovation

MILESTONES

Numbers

Institutions

Knowledge

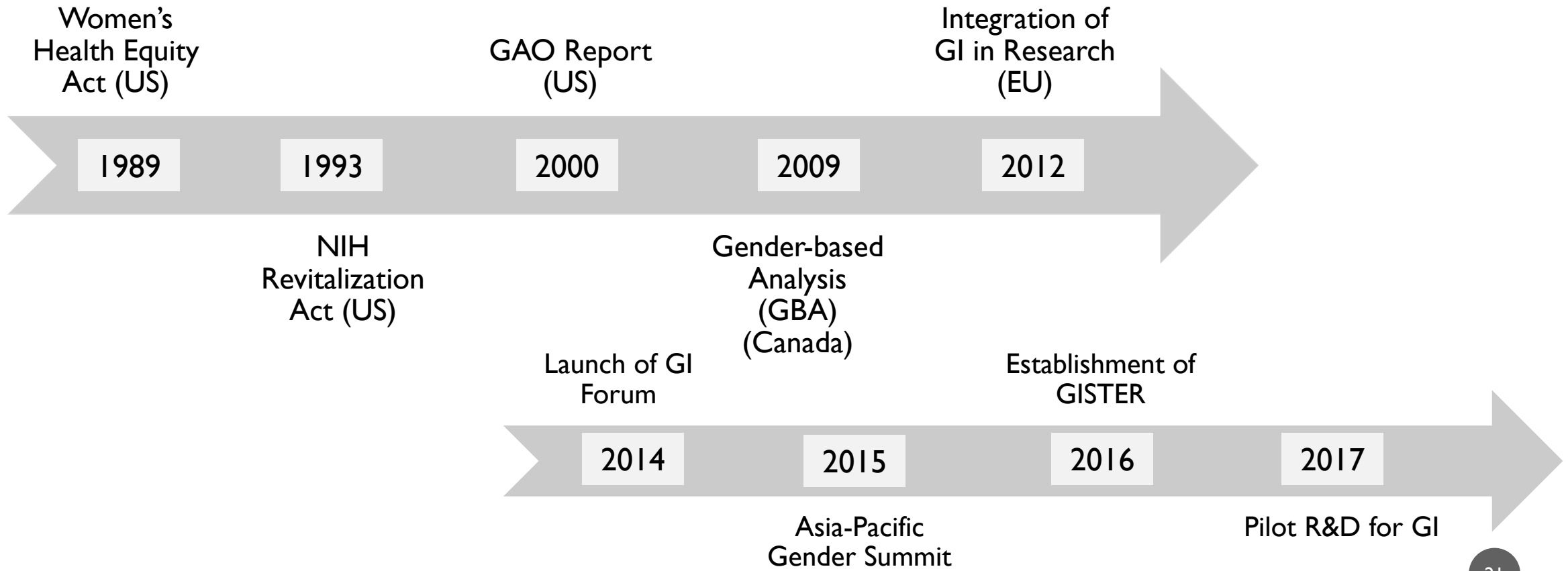
THREE LAYERS OF GENDERED INNOVATION (GI)

Fixing numbers (e.g., hiring quotas,
gender ratio of committees)

Fixing institutions (e.g. paternal
leave, childcare center at work)

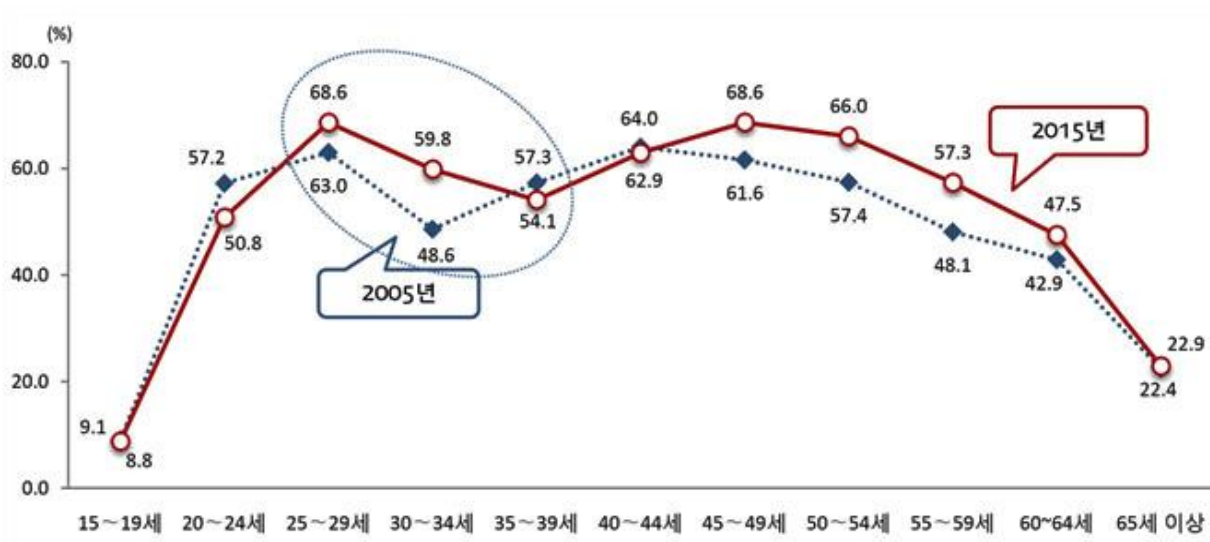
Fixing knowledge (e.g., bias in
modern depictions of fertilization)

TIMELINE OF GI POLICY



FIXING NUMBERS

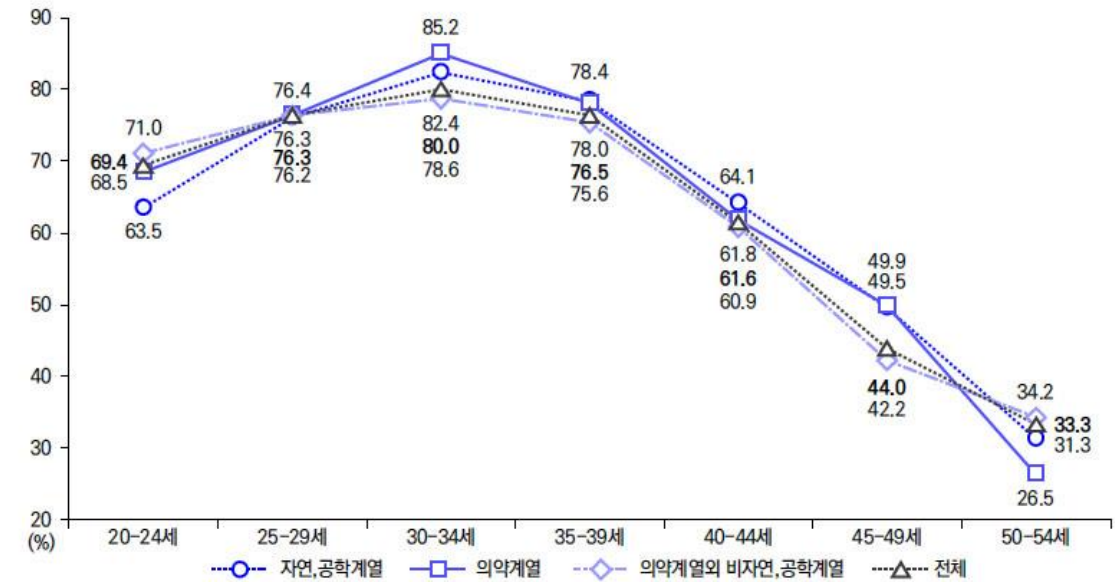
- Women Returners in R&D Program introduced in 2012 to address the L-Curve problem



자료 : 통계청, 「경제활동인구연보」

M-Curve typical of female labor participation in Korea

그림 4-3 | 전공별 비취업자의 연령별 출산·육아 등 경력단절 여성과학기술인 비율 (2014)



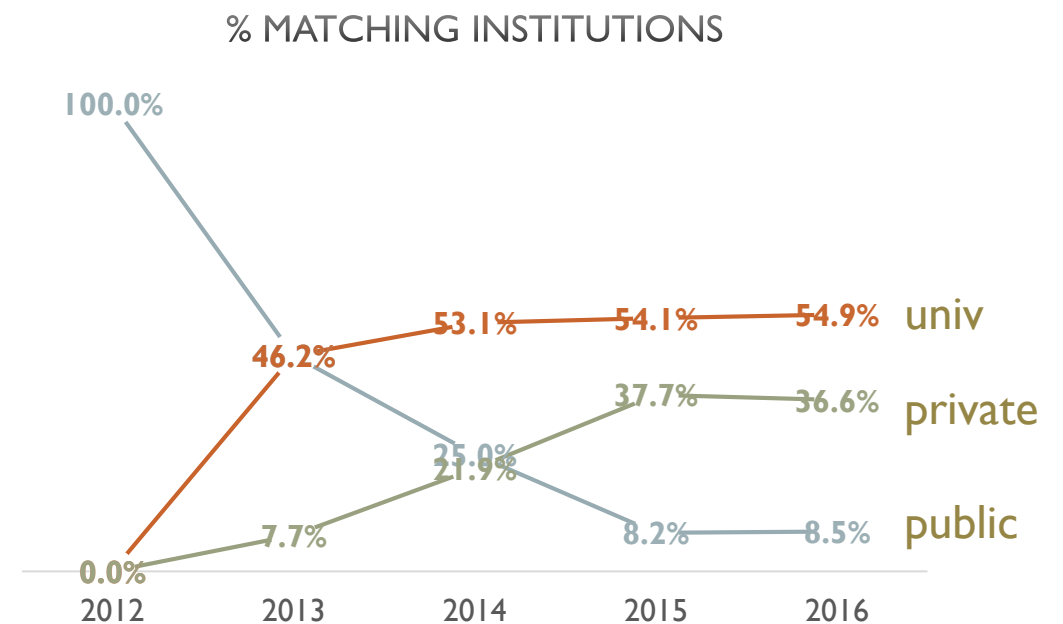
주 : 15세 이상 54세 이하, 기혼(유배우, 사별, 이혼)여성 중 최종학위(재학생, 휴학생, 중퇴자를 이전학위로 계산함)는 전문대 졸업생 이상만을 고려함.
 자료 : 통계청, 「2014년 상반기 지역별 고용조사」 원자료.

L-Curve unique to women in S&T

FIXING NUMBERS

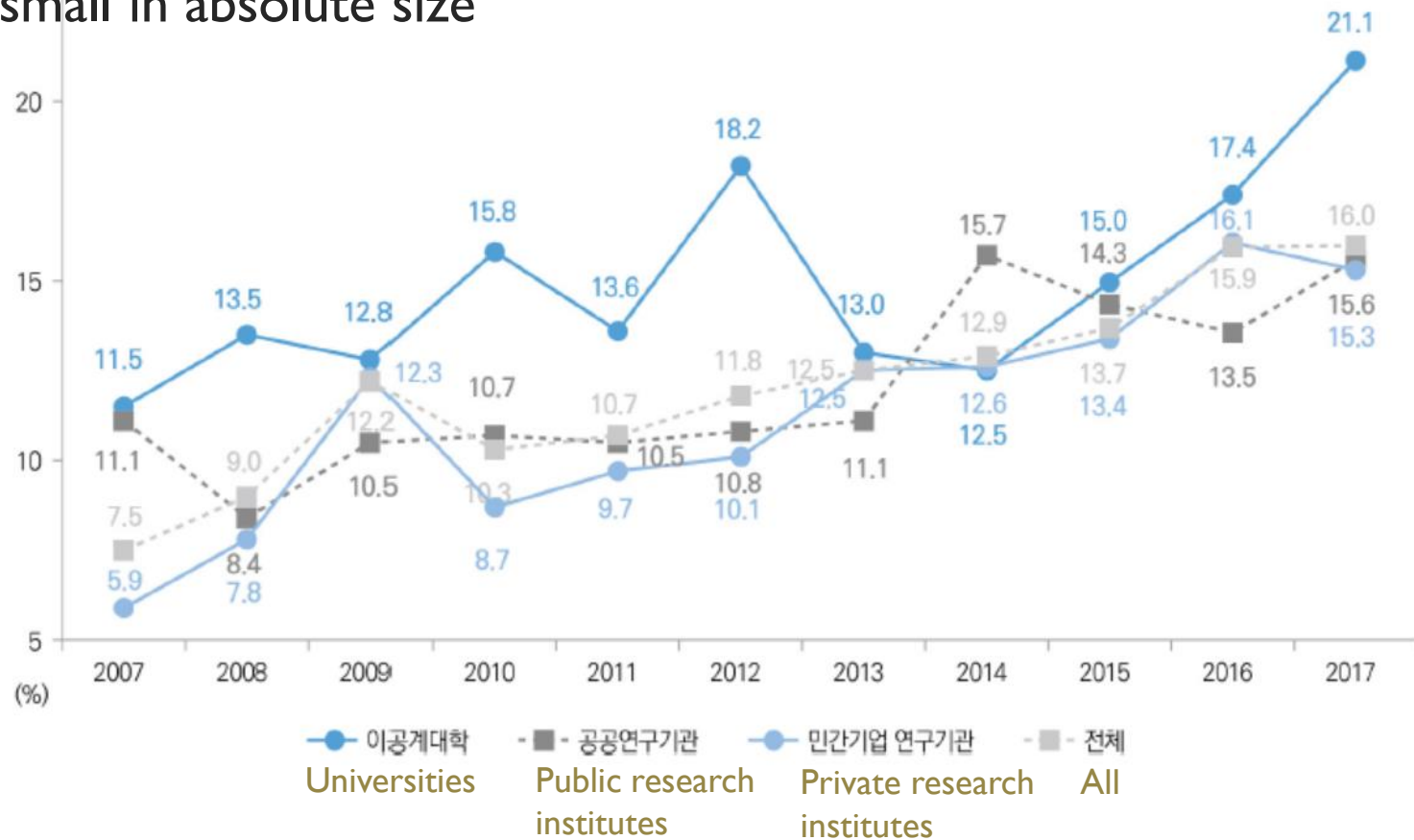
- Women Returners in R&D Program growing quickly: from 39 to 127 women returners, from 5 to 82 institutions just over five years

Year	Returners			Matching Institutions				Budget (billion KRW)
	New	Continuing	Total	Public	Univ	Private	Total	
2012	39	-	39	5	-	-	5	12.5
2013	22	36	58	6	6	1	13	15
2014	45	55	100	8	17	7	33	24
2015	56	60	116	5	33	23	61	25
2016	41	86	127	7	45	30	82	28



FIXING NUMBERS

- Increasing share of women in workplace promotions, though still small in absolute size



Annual Report of Women in SET (2017)

FIXING INSTITUTIONS



- Stop-the-Tenure-Clock (STC)
 - Introduced first at KAIST (2008)
 - Expanded to other universities (e.g., SNU 2010)
 - Applied to only female professors
 - Ironical result of STC when applied to all genders (Rate of tenure approval increasing among male professors but declining among female professors in a 2016 study of US universities of top 50 economics)

INSIDE
HIGHER ED

Unintended Help for Male Professors

Colleges adopted policies to stop the tenure clock to help professors who are new parents, especially mothers. Study suggests fathers may be the real beneficiaries.

FIXING INSTITUTIONS

- Childcare centers
 - Mandatory requirement for workplaces with at least 300 female (full-time) workers

Type of organizations	Mandatory		Optional	
	Total	%	Total	%
S&T universities	90	68.9	174	10.8
Public research institutes	59	86.4	127	32.3
Companies with research units	286	67.5	4384	4.6

- Paternal leave now adopted in almost all types of organizations in S&T

FIXING KNOWLEDGE

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

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What is **Gendered Innovations**?

SEX & GENDER ANALYSIS

Methods

Terms

Checklists

CASE STUDIES

Science

Health & Medicine

Engineering

Environment

SCIENCE

SCIENCE
Sex and Gender Methods for Research | Gendered Innovations >

- Harnessing the creative power of gender analysis for discovery and innovation
- Eight out of 10 drugs withdrawn from US market due to life-threatening health effects showed greater severity in women (GAO 2001)

FIXING KNOWLEDGE

- “Whether we like it or not, we all react to gender cues. So whether deliberately designed or not, a gendered robot will trigger reactions that a non-gendered robot will not.” (Alan Winfield)

Why are virtual assistants always female? Gender bias in AI must be remedied

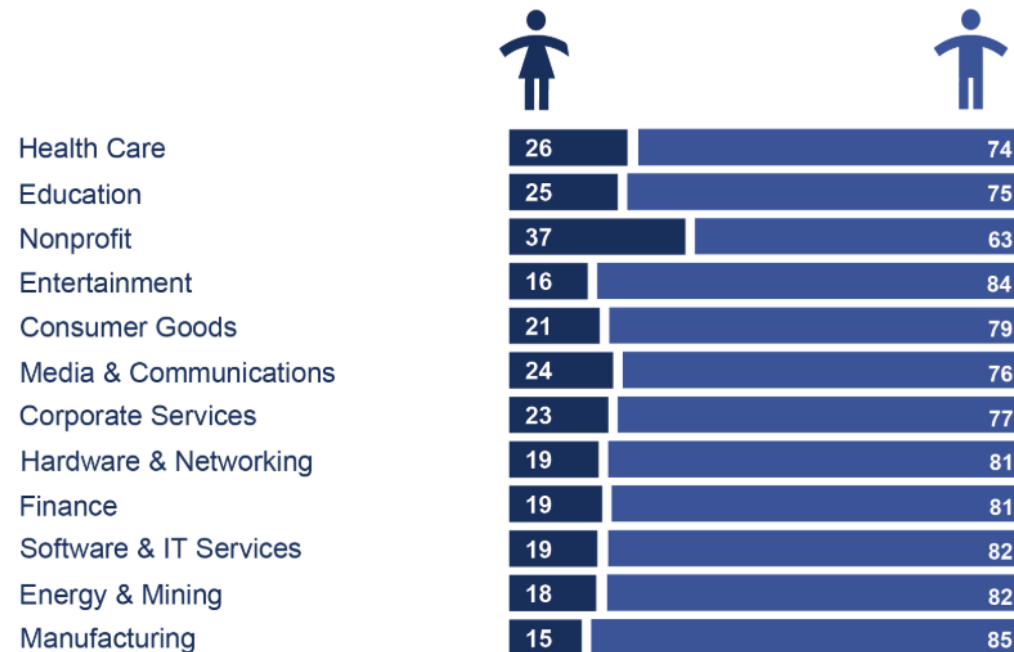
As machine learning is increasingly incorporated into business and society, is male bias being programmed in?

guardian.com

FIXING KNOWLEDGE

- Gender bias in AI/robot design perhaps related to fixing numbers in that field →

Industry AI Gender Gaps



FIXING KNOWLEDGE



gister.re.kr

- GISTER (Gendered Innovation in S&T Research Institute)
 - Emerged out of the partnerships among WISET & KOFWST for the preparation of the Asia-Pacific Gender Summit
 - Holding regular forums introducing the concept of GI and spreading best practices in research and education for GI
 - Conducting own research projects (with Korea National Research Foundation funding)
 - Issued the Sex and Gender Analysis Guideline for Biomedical Research in Korea

CHALLENGES

Still Fixing
Numbers

Work-Life
Balance

Taking R&D
Seriously

STILL FIXING NUMBERS

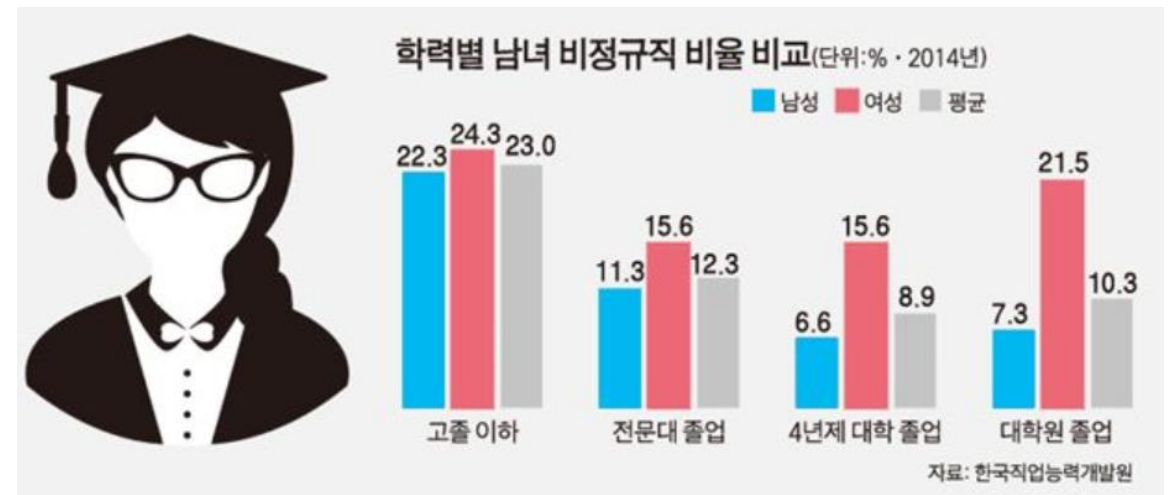
- Share of non-regular (temporary) workers increasing among women
- The more educated, the more a women is likely to be hired in non-regular (temporary) positions

Share of non-regular workers

Year	2008	2011	2014	2017
Male	28.8	27.7	26.4	26.3
Female	40.7	42.9	39.9	41.2

Statistics Korea (2018)

Korean Statistics



High school or less

Grad school or more

WORK-LIFE BALANCE

- From work-family balance to work-life balance
- From childcare to all types of care including self care

Institutions	Total Number	Maternity leave	Childcare Leave	Monetary support for childcare
S&T universities	265	100	99.6	27.1
Public research institutes	185	98.9	99.5	38.7
Private companies operating research units	4,107	98.9	98.6	22.8

WORK-LIFE BALANCE (WBL)

- Best practices emerging but seen as exceptions

Work conditions
enabling WBL

Recognition of
childcare as
shared
responsibility

Decent education
infrastructure

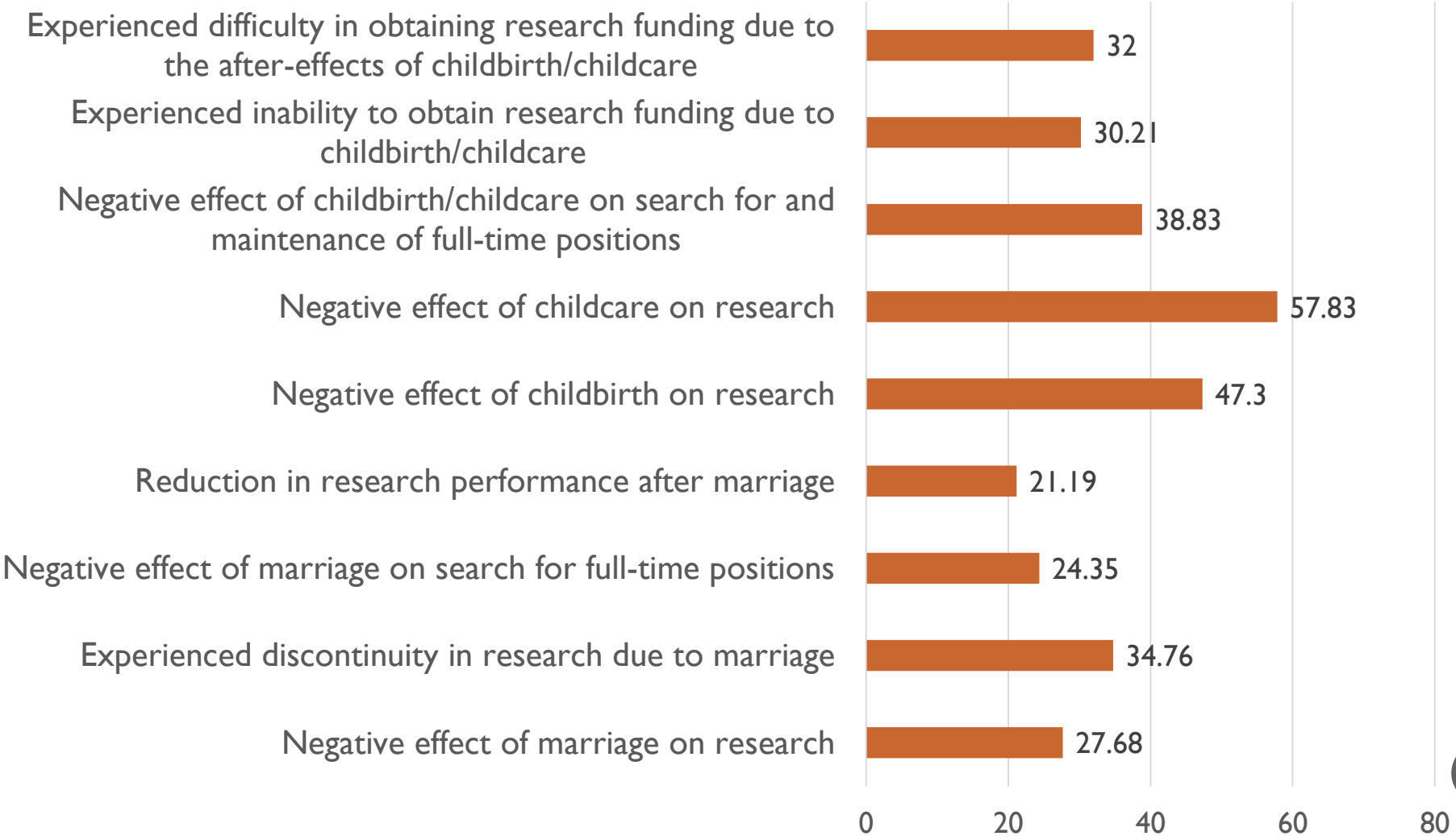
Family-friendly
work culture



Government officials sending their kids to preschools in Sejong
(special city for government administrative functions)

WORK-LIFE BALANCE

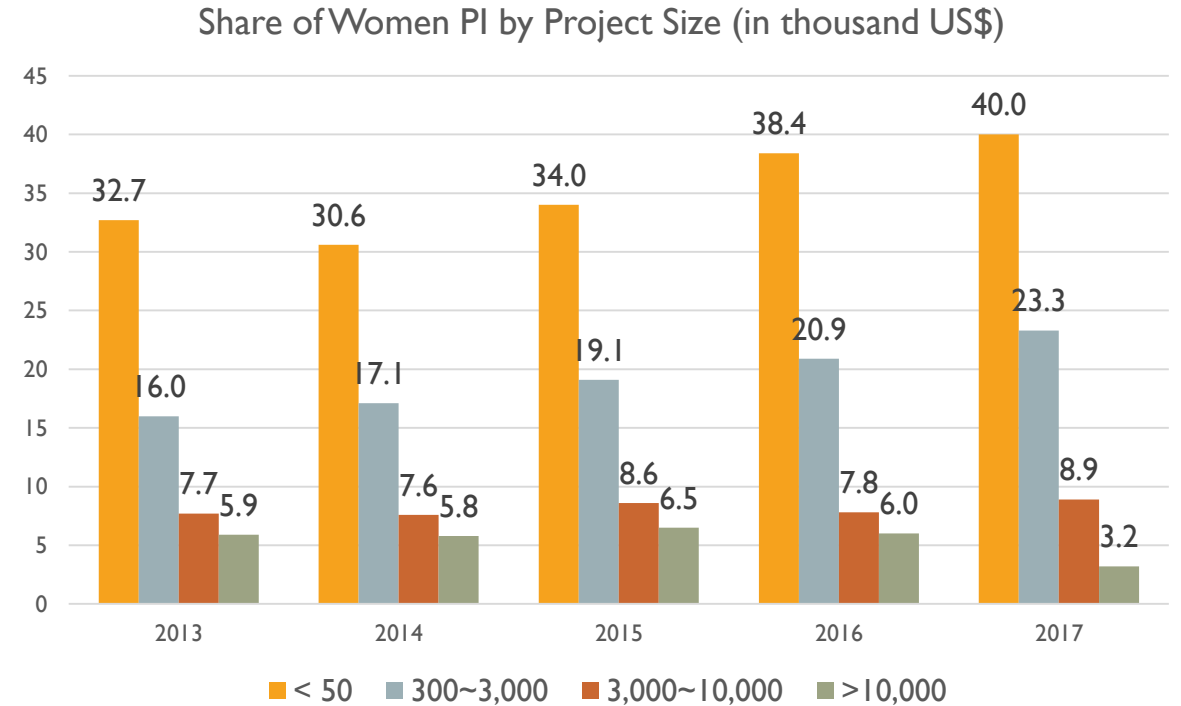
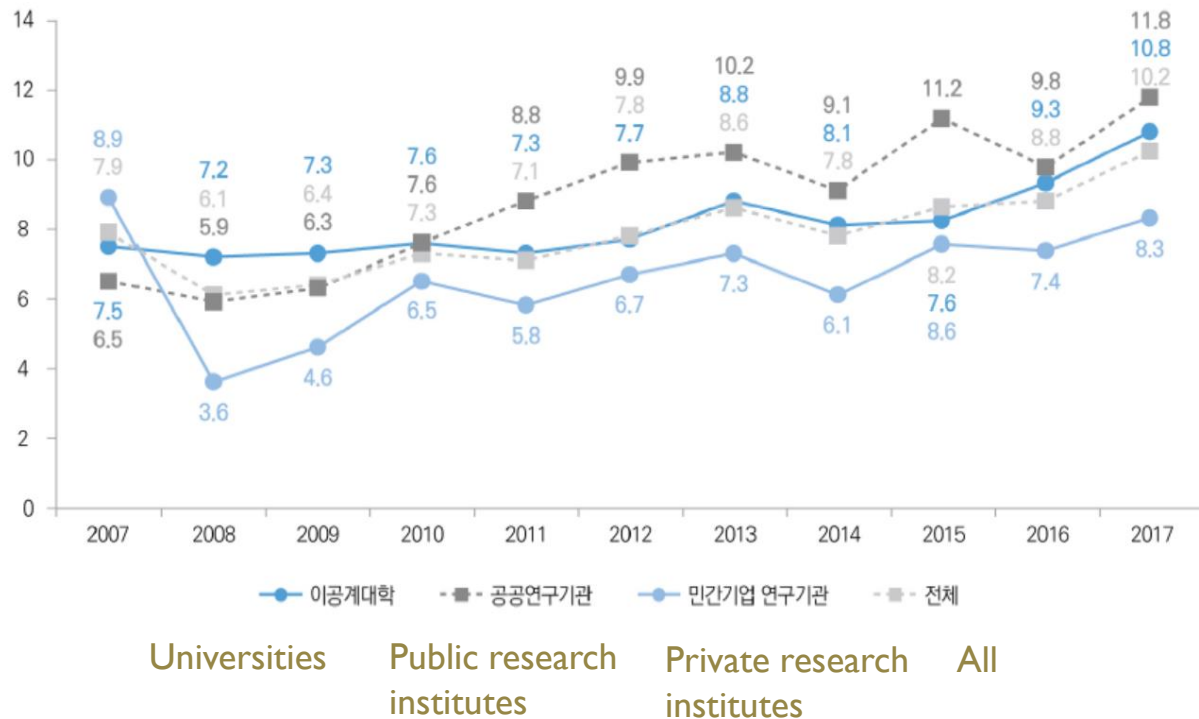
Burden of Marriage/Childbirth/Childcare



Basic Research
Project Survey for
Women
Beneficiaries (Korea
National Research
Foundation 2009)

TAKING R&D SERIOUSLY

- Women researchers still needing to lead R&D (esp., large-scale projects)



THANK YOU!

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