Best Practice in Asia

Korea’s Policy and Key Support Programs for Women in STEM

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Center for Women in Science, Engineering and Technology
Table of Contents

I. Current Status of Women in STEM in Korea
II. Introduction of WISET
III. Key Support Programs
IV. Major Performances
V. Conclusion and Challenges
I. Current Status of Women in STEM in Korea
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R&D Investment in Korea

< Human and Financial Resources Devoted to R&D >

Researchers per thousand employment (FTE)

Source: OECD data
R&D Investment in Korea

< Female ratio of total researchers in major countries >

Korean women researcher’s ratio is **gradually increasing** but **still low** compared to the international level.

Source: OECD(2017), Researchers (indicator)
I. Current Status of Women in STEM in Korea

Gender Based Statistics in STEM on Career Stages

I. Current Status of Women in STEM in Korea

Female Labor Force Participation Rate in STEM by Age

- 20%p drop in 30’s on 1st career interruption stage .......
- L-shaped curve in 40’s on 2nd career interruption stage ..
- 20%p drop in 50’s on 3rd career interruption stage .......

I. Current Status of Women in STEM in Korea

Female Labor Force Participation Rate in STEM By Marriage

Conventional gender role in marriage life is still dominant

Status of Career Interruption

Average Period of Career Interruption

- More than 10 years: 37%
- 5 ~ 10 years: 24.2%
- 3~5 years
- etc

Number of CIW
- 300,000 persons
- MS·PhD / 17,000 persons

Ⅱ. Introduction of WISET
WISSET

Center for Women In Science, Engineering and Technology

Comprehensive Support Agency for women in STEM in Korea (funded by government)

2013

Establishment
based on the Act on Fostering and Supporting Women in STEM (in 2002)

2017

Designation as Public Agency
under the government, the Ministry of Science, ICT and Future Planning

Fosterage

STEM major experience programs for female students to pursue interest and aspiration for future career

Utilization

Tailored support programs for female researchers in STEM to build and continue their stable career path

Infrastructure

System implementation based on law and policy and establishing environment of work-life balance
Support Programs in Whole Life Cycle of Women in STEM

- Fosterage
  - On/Offline Mentoring Programs
  - Postgraduate-led Student Research Team Project
  - Female STEM Student Empowerment in Regional Universities

- Utilization
  - Support for CIW into R&D
  - Support for New Female Researcher
  - Job Matching / Job Training Program
  - Support for Research Travel Grants
  - Start-up Support

- Infrastructure
  - Support for operating legal systems
    - Gender Quota System for Recruitment
    - STEM Attaché Program
    - Institution Innovation for Women-friendly Environment
  - Policy Research and forums
  - Survey on the utilization of Women in STEM in Korea

II. Introduction of WISET
III. Key Support Programs
Virtuous Circulation of Supporting Programs

Institutional System & Policy
(2) Operating Legal System

Enlargement of R&D workforce
(1) Support for CIW into R&D

Raising Awareness
(3) Diffusion of Gender Awareness

III. Key Support Programs: Overview
Support for CIW into R&D

Matching highly-educated CIW with R&D institutions and providing research grant for their return back into labor market

Starting year 2012

Matching

Assisting Grant (for 1 person)

€ 15,400/year
(Maximum 3 years)

- Public Research institutions
- Universities
- Private enterprises (SMEs)
Support for **CIW into R&D**

**Scale-up and diversifying** participating institutions
Increasing high-educated CIW and private enterprises (SMEs)

- **Total budget**: (‘12) € 961.5 thousand → (‘17) € 3,077 thousand

### Number of participants

<table>
<thead>
<tr>
<th>Year</th>
<th>Bachelor</th>
<th>Master</th>
<th>Doctor</th>
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<tr>
<td>2012</td>
<td>30</td>
<td>37</td>
<td>18</td>
</tr>
<tr>
<td>2013</td>
<td>39</td>
<td>56</td>
<td>10</td>
</tr>
<tr>
<td>2014</td>
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<td>2015</td>
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<td>10</td>
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<td>2016</td>
<td>133</td>
<td>11</td>
<td>59</td>
</tr>
<tr>
<td>2017</td>
<td>150</td>
<td>?</td>
<td>?</td>
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</table>

### Number of participating institutions

<table>
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<tr>
<th>Year</th>
<th>Public Research Institution</th>
<th>Universities</th>
<th>Private Enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>2013</td>
<td>13</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>2014</td>
<td>35</td>
<td>33</td>
<td>6</td>
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<tr>
<td>2015</td>
<td>61</td>
<td>4</td>
<td>71</td>
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<tr>
<td>2016</td>
<td>35</td>
<td>35</td>
<td>4</td>
</tr>
<tr>
<td>2017</td>
<td>?</td>
<td>?</td>
<td>?</td>
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</table>
Support for CIW into R&D

Former

Dr. HWANG
with 2 children
Computer Engineering

1 year in career interruption

Researcher
with temporary contract
KISTI

2012~14

Present

Senior Researcher
with permanent contract
(KISTI)

Dr. KIM
with 2 children
Biology

3 years in career interruption

Researcher
with temporary contract
Pusan National University

2013~15

Assistant Professor
Dong-Eui Institute of Technology

Dr. KIM
With 3 children
Pharmacology

2 years in career interruption

Researcher
with temporary contract
Samyook University

2014~16

Full-time Research Professor
Samyook University

R&D sector

80.4%

Career Retention Rate

73.6%

Full-time

76.8%
Implementing policies on recruiting new R&D women workforce up to 30% by 2018 in STEM institutions

By appointing an officer (attaché), supporting and overseeing the system to promote employment and improve conditions of women workforce in STEM research institutions

Assisting grants to institutions that conduct an institution innovation project for women-friendly environment such as capacity building programs or working condition improvement for women
Operating **Legal System**

**Gender Quota System for Recruitment**

- Target: 103 STEM Research Institutions funded by government
- Legal Basis: Article 11, Act on Fostering and Supporting Women in STEM

< Change of women in regular position by institution type ('06-'15) >

- **Public Research Institution**: 7.6% in 2006, 12.2% in 2007, 12.4% in 2009, 14.5% in 2015
- **Total Private Enterprises**: 7.6% in 2006, 12.2% in 2007, 12.4% in 2009, 14.5% in 2015
- **Universities**: 7.6% in 2006, 12.2% in 2007, 12.4% in 2009, 14.5% in 2015
Operating Legal System: **Excellent Case**
National Fusion Research Institute (NFRI)

1) Daycare Center in 5 minutes’ walk from the institution
2) Lactation room and Parking space for pregnant women
3) Counselling room and Fitness Center to get rid of stress
III. Key Support Programs (3)

**Diffusion of Gender Awareness**

**Growing Awareness of Gendered Innovation**

- **Gender Summit 6 – Asia Pacific 2015** (hosted in Seoul)
  “Better Science & Technology for Creative Economy: Enhancing the Societal Impact through Gendered Innovations in Research, Development and Business”

- ** Establishment of “Center for Gendered Innovations in S&T Researches” (Project)**
  Pursuing Excellence and Applicability of S&T Researches through Gendered Innovations (’16-’19)
  Research on the Implementing Gendered Innovations to Funding Policy (’16-’17)

**Gender intelligence leadership education**

- **Establishing Action Plan through awareness of gender difference** (WISE Academy, ’17–)
  - Objectives
    1) Understanding differences of gender characteristics and its awareness
    2) Enhancing flexible communication skills to develop organizational performances and teamwork

**Expansion of Gender Intelligence Education to Regional Universities**

- **Organizing regular workshop and special lecture about gender-sensitive teaching method**
- **Developing textbook for engineering education in the perspective of gender intelligence**
  (Research) Engineering education and Gendered Innovations (’14)
  Gender-sensitivity Learning Material for Institutes of S&T (’14)
IV. Major Performances
IV. Major Performances

**Economic Activity of 40’s Female STEM Workforce**

3 times more and 9.7% up in 40’s over 10 years

<table>
<thead>
<tr>
<th>Year</th>
<th>Female STEM</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>84,027</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>166,161</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>254,674</td>
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</tr>
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</table>

**Female Labor Force Participation Rate in STEM**

Recovering in 30’s and 40’s
IV. Major Performances

Qualified Improvement in Employment

**Recruitment**

- Female ratio of newly recruited R&D employees in STEM
  - 2006: 22.8%
  - 2011: 22.6%
  - 2015: 24.2%

**Position status**

- Ratio of women STEM workforce with permanent contract
  - 2006: 9.4%
  - 2011: 11.2%
  - 2015: 14.6%

- Ratio of women STEM workforce with temporary contract
  - 2006: 59.1%
  - 2011: 55.0%
  - 2015: 43.4%
IV. Major Performances

Implementing Work-Life Balance Promotion System in STEM Research Institutions

Operation rate of mandatory system
- Maternity leave
- Parental leave (both)
- Nursing time
- Paternity leave

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2011</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>63.2%</td>
<td>80.7%</td>
<td>94.3%</td>
</tr>
</tbody>
</table>

Operation rate of voluntary system
- Flexible time/telecommuting system
- Lactation room facility
- Infertility leave

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2011</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>31.6%</td>
<td>43.0%</td>
<td>51.0%</td>
</tr>
</tbody>
</table>
V. Conclusion and Challenges
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01 Korea has the highest ratio of R&D investment to GDP among OECD countries. However, the ratio of female researchers is still lower than other countries.

02 The environment and infrastructure for empowering women in STEM have been established through various support programs like enlargement of women R&D workforce, setting up policies/institutional systems and efforts for awareness-raising.

03 These efforts have helped CIW to return back their career. As a result, the ratio of female labor force participation has increased till 64.9% with qualified improvement in employment conditions.

04 We still have challenging issues like relatively low female ratio of management position(8.5%) and female workforce leakage on the 2nd and 3rd stages. It would be our future work to be solved.

05 One of the important national agenda in our New Government is to improve the gender equality. In this context, the government, academia and industry will continue to make strategic efforts and supports to develop gender diversity in STEM fields.
Thank you for listening

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