



Strengthening R&D Capacity of Female Students in STEM

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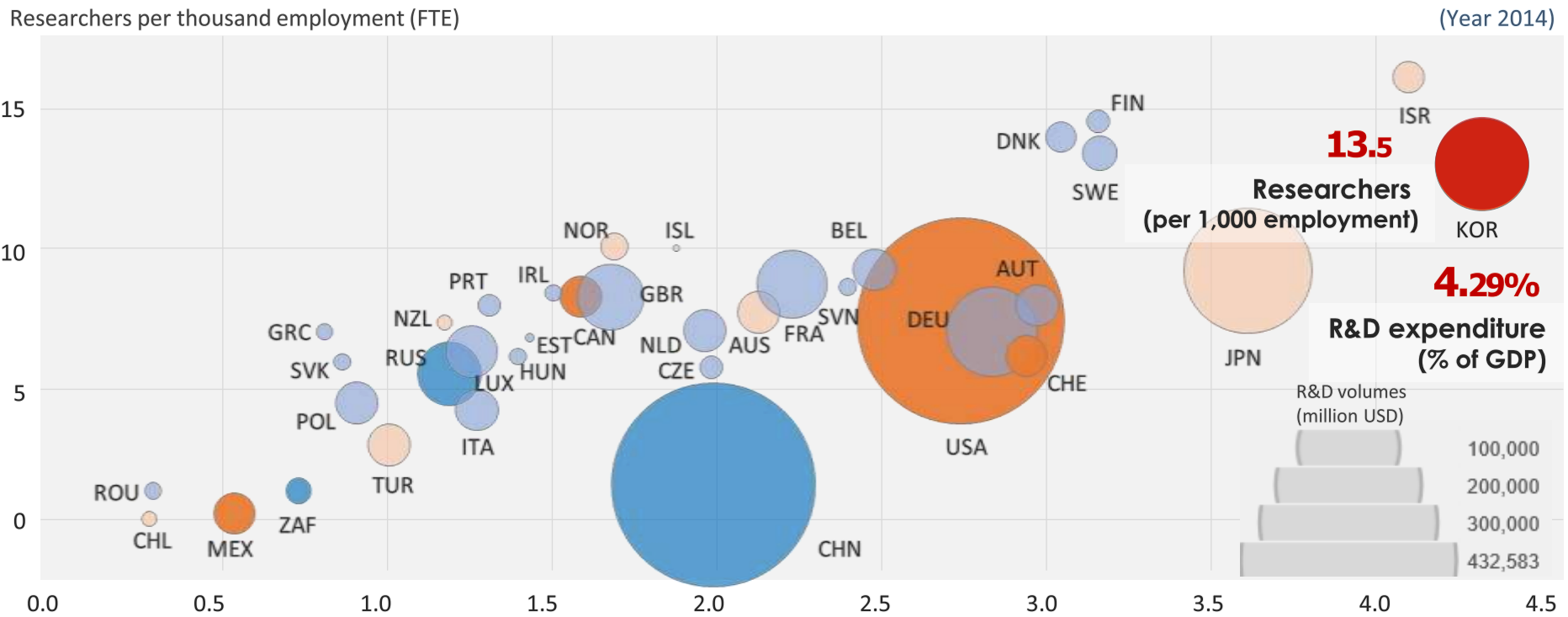
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I . Current Status of Women in STEM in Korea

R&D Investment in Korea

< Human and Financial Resources Devoted to R&D >



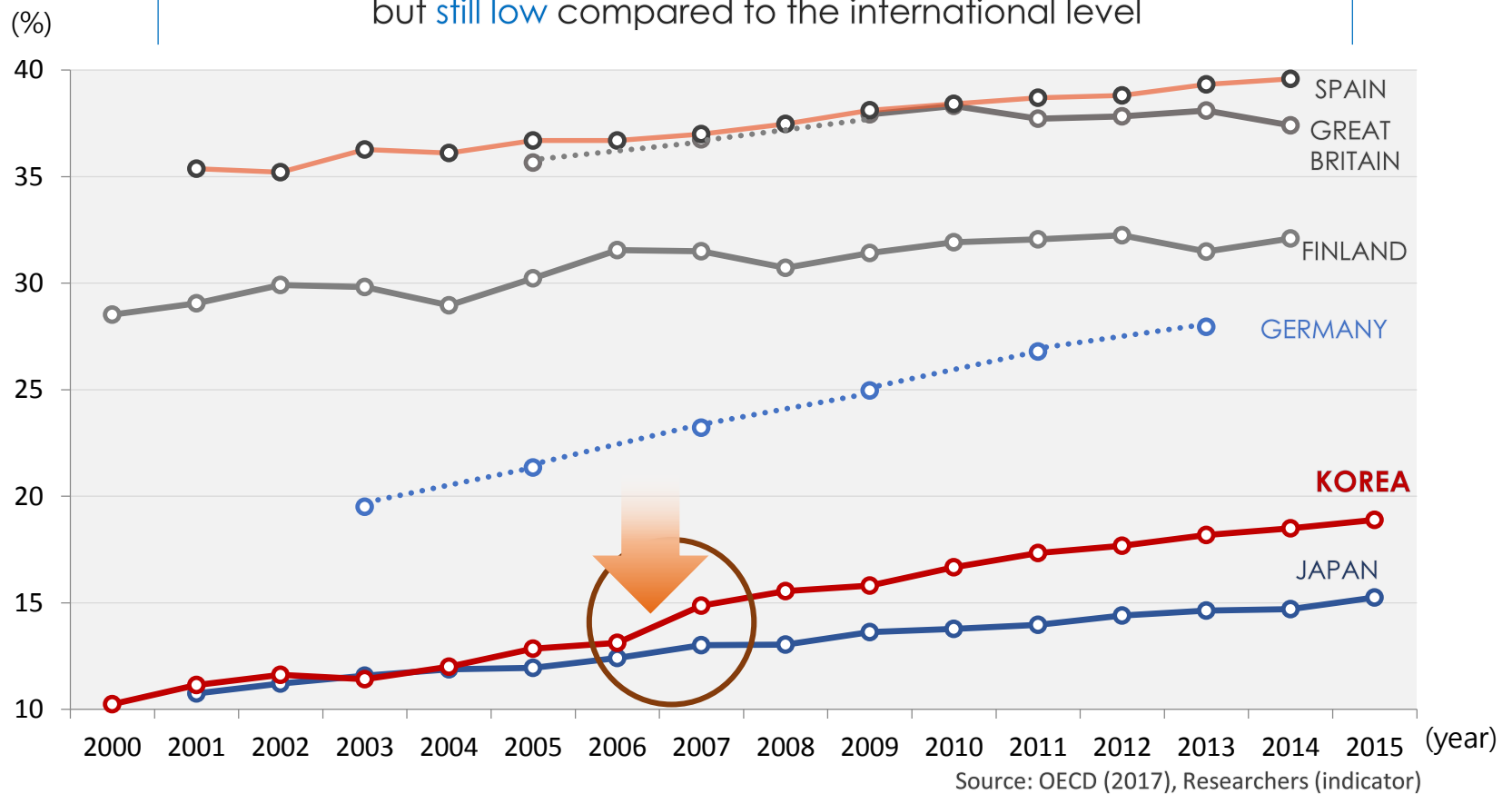
Gross domestic expenditures on R&D as a percentage of GDP

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

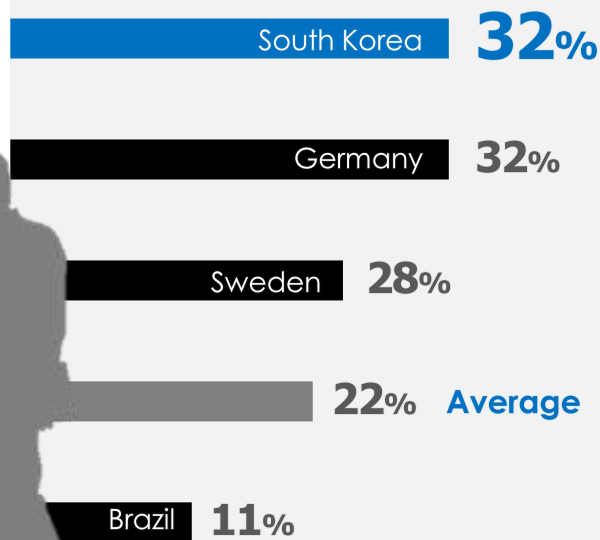


Status of Students* in STEM

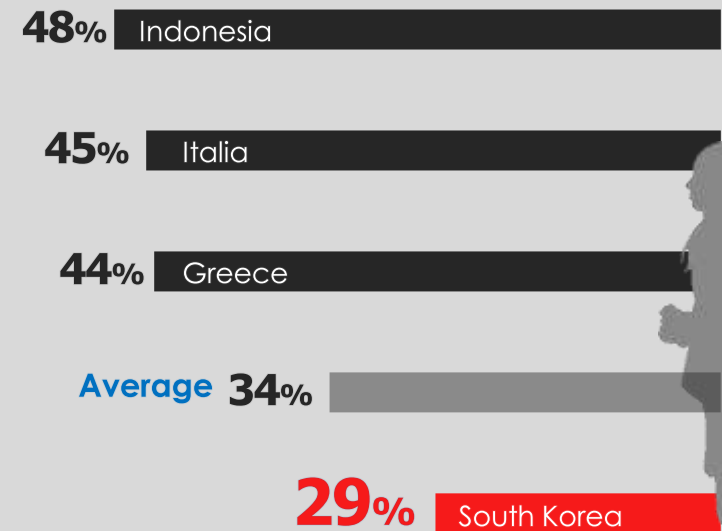
Korea takes the 1st position on choosing major in STEM,
Ratio of female students is below the average

* Tertiary education graduates in 2012

Ratio of students in STEM



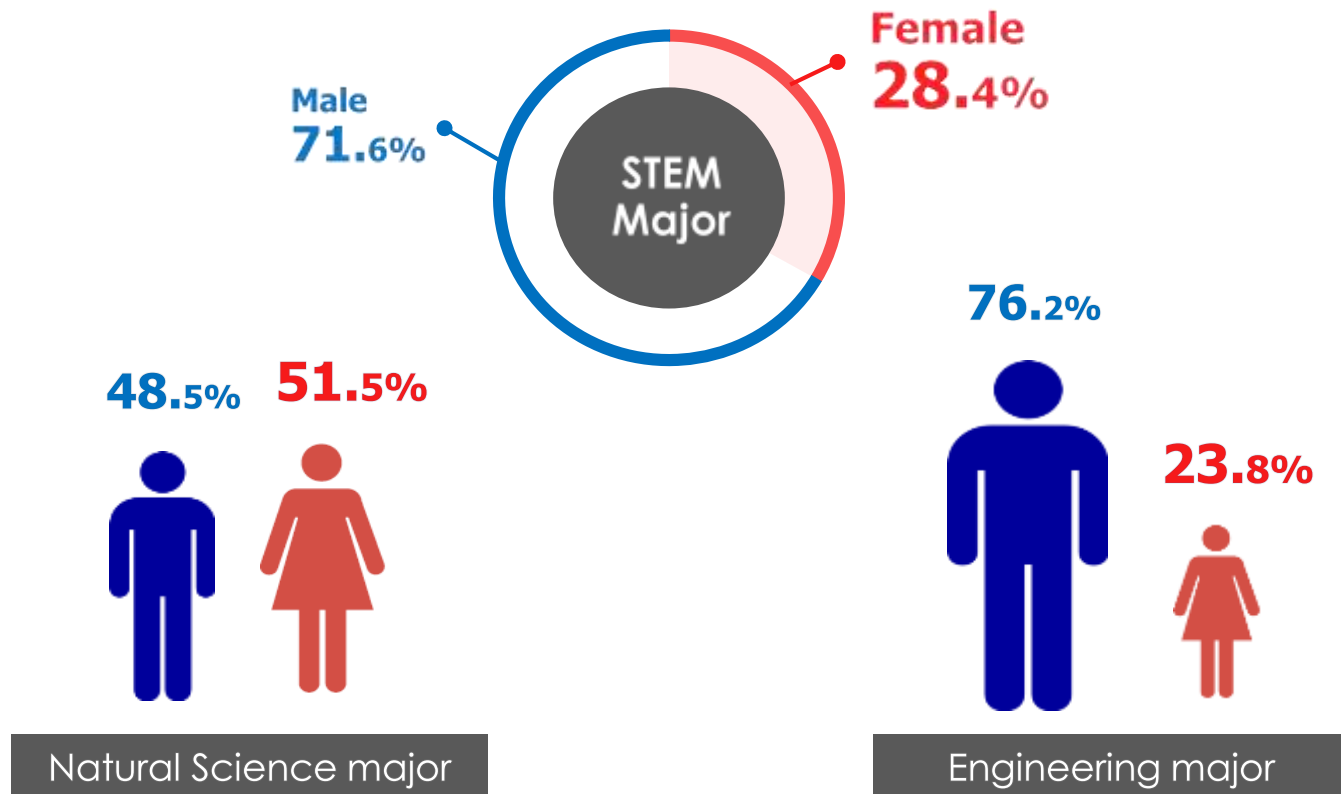
Ratio of female students in STEM



Gender ratio of **New Enrolled** Students in STEM Major

('15 / undergraduate)

Relatively **low female ratio** of STEM students,
Significant gender gap in engineering major



Source : 2015 Report on Korean Women in Science, Engineering and Technology, WISET (2016)

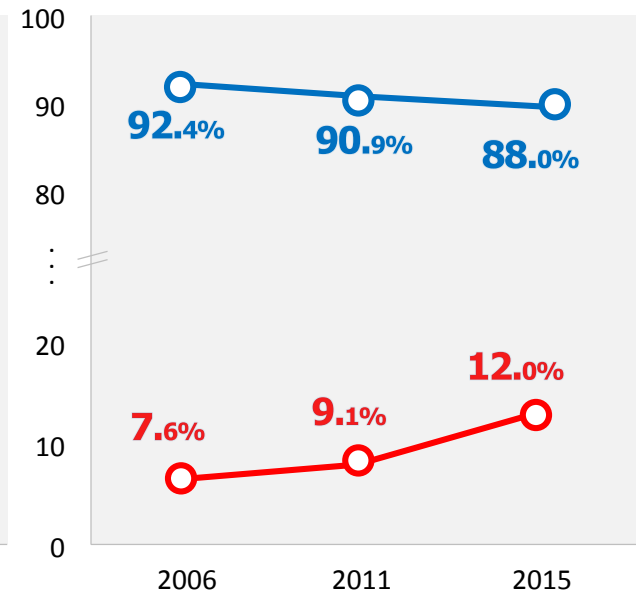
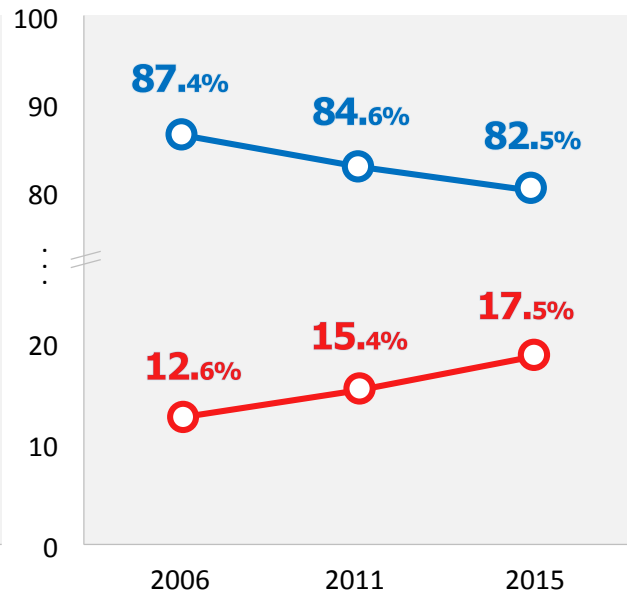
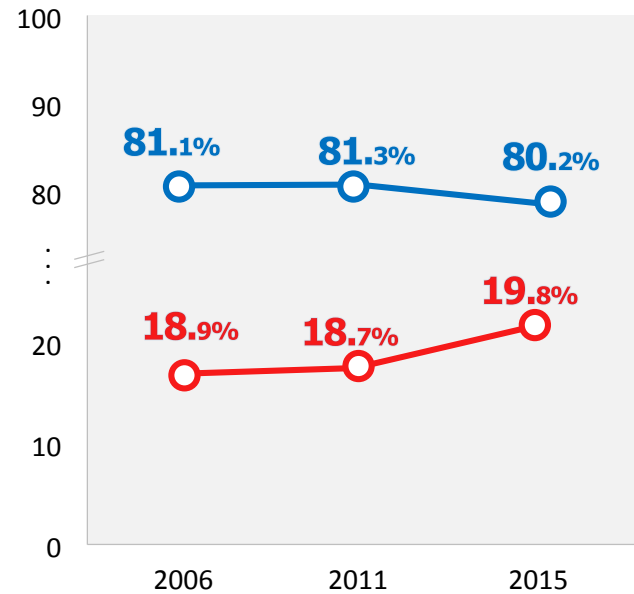
Female Ratio of Graduates in Engineering Major

Having been **reducing gender gap**
and **Qualitatively increasing** female ratio of **MS. and PhD.**

Bachelor

Master

Doctor

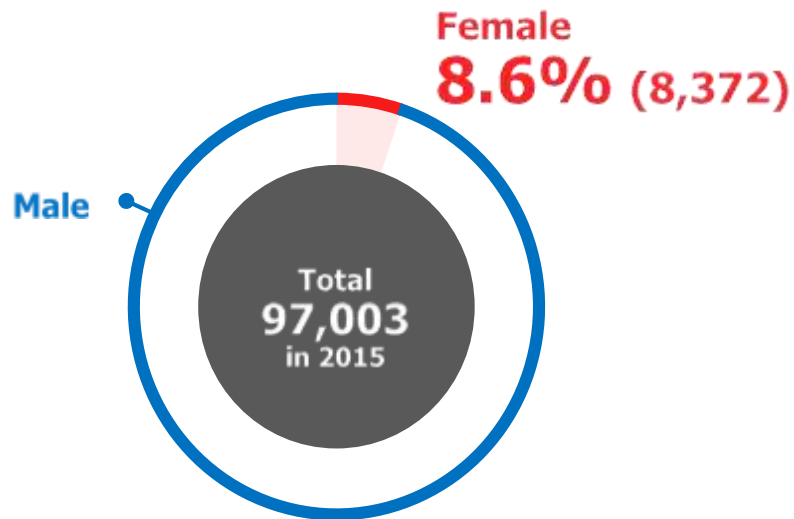


Source : 2015 Report on Korean Women in Science, Engineering and Technology, WISSET (2016)

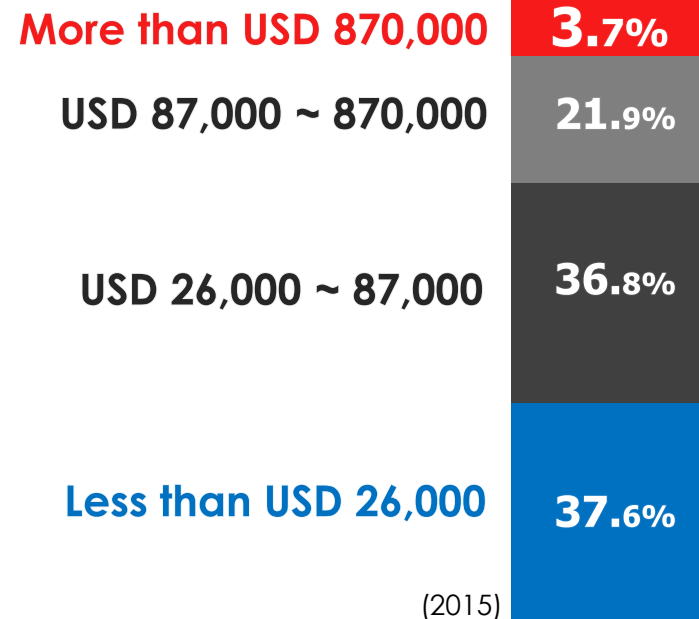
Ratio of Project Leaders and Project budget

Low ratio of project leaders and
Low ratio in large-scale projects with high budget

Ratio of Project Leaders



Project Budget with Female Leaders



Source : 2015 Report on Korean Women in Science, Engineering and Technology, WISSET(2016)

II. Introduction of WISET



WISET

Center for **W**omen **I**n **S**cience, **E**ngineering and **T**echnology

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

Fostering



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

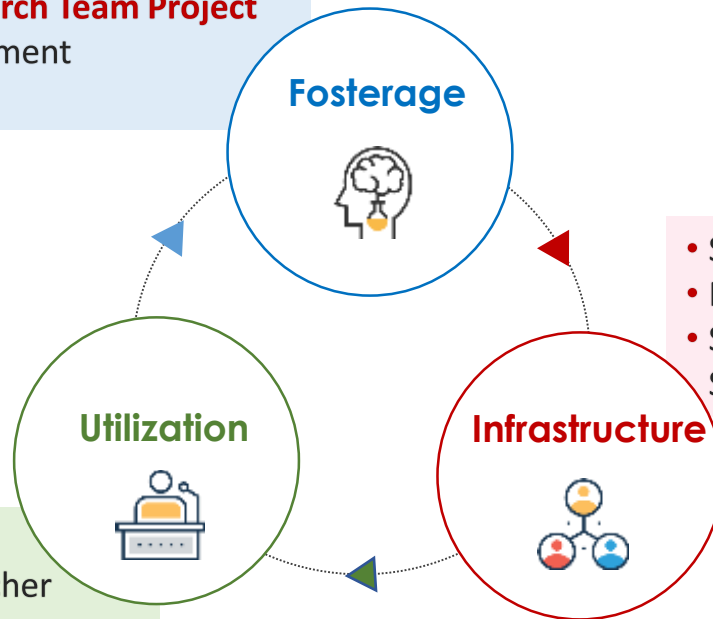
Infrastructure



System implementation
based on law and policy
and establishing environment
of work-life balance

Support Programs in Whole Life Cycle of Women in STEM

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



- Support for operating legal systems
- Policy Research and forums
- Survey on the utilization of Women in STEM in Korea

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

* CIW : Career Interrupted Women

III. Postgraduate-led Student Research Team Project

Postgraduate-led Student Research Team Project (Learning by Researching)

Fostering excellent female student researchers
by funding research grants since 2004

Objectives

- To attract talented female students to engineering fields
- To foster female professional workforce in R&D sector
- To improve female researchers' R&D leadership

Postgraduate-led Student Research Team Project

Project Period 7 months

Amount of grants * Total budget(2017) : USD 1.18 million

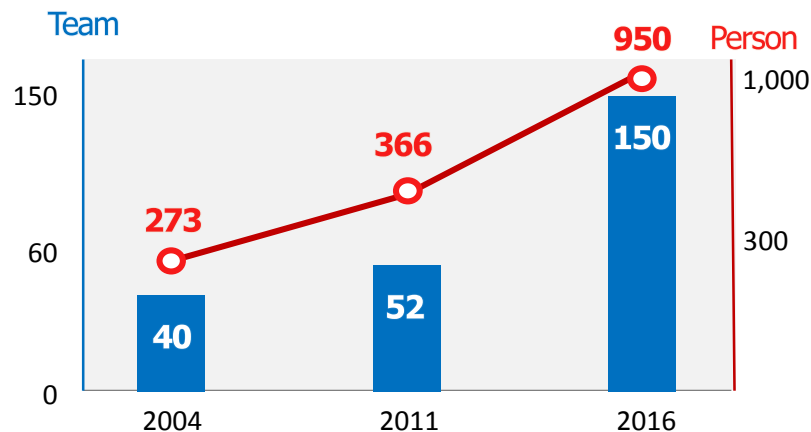
- **Intensive course**(50) : USD 5,400 per team
 - undergraduate(4) + postgraduate
- **Regular course**(100) : USD 4,600 per team
 - high school student(2~4) + undergraduate(2)+ postgraduate

Co-operation

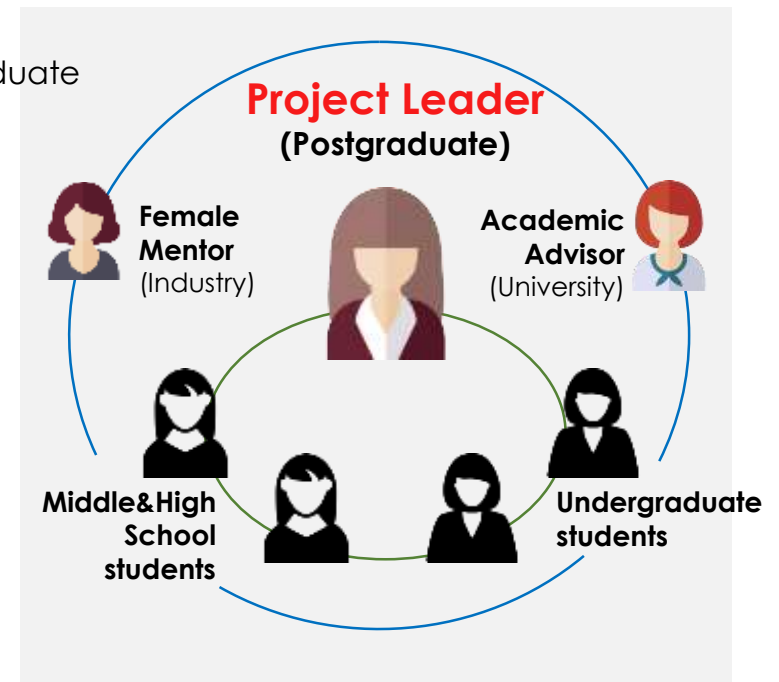
- 8 key academic societies in engineering field

Participating teams & Participants

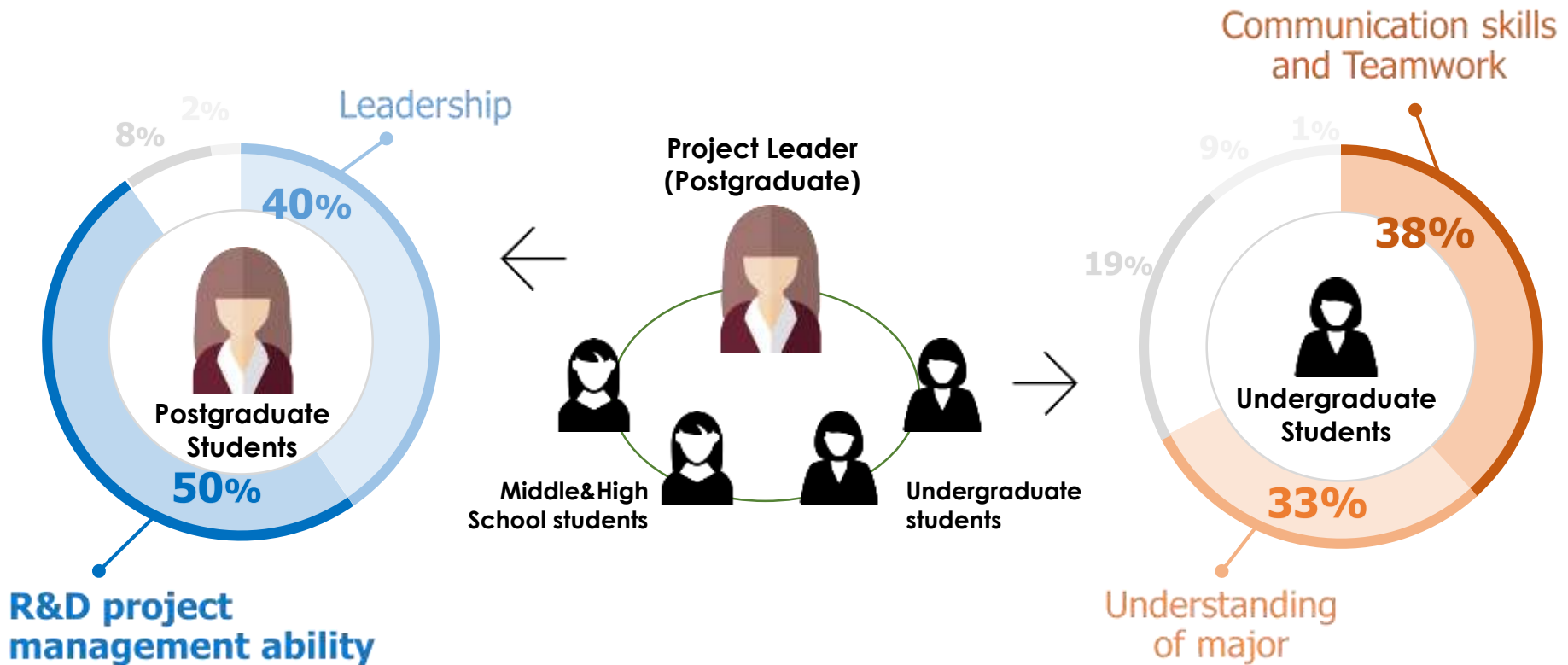
- Total **963** teams and **6,441** persons (2004-16)



Team Composition

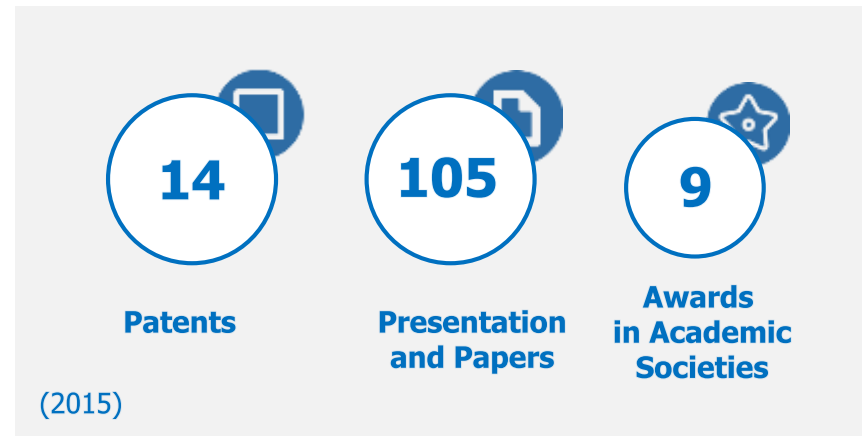
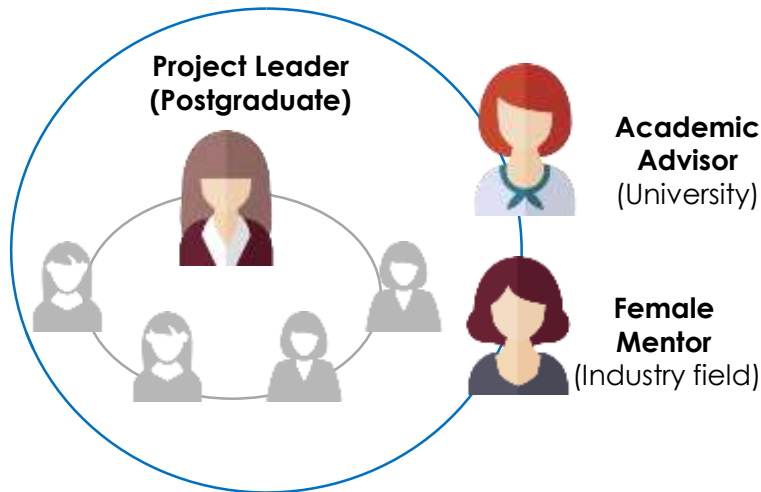


Development of **research capacity** and **leadership**



Program Achievement | Based on "Follow-up survey of participants in 2013" (conducted in 2016)

Strengthening expertise in major fields → Advancing to R&D fields



Employment Status of Participants after the project : STEM and R&D fields

Postgraduate Students



Undergraduate Students



Pre-experience in Academic Societies and Research Network

Collaborating with key academic societies in engineering field



KSCE Korean Society of Civil Engineering
Civil Engineering, Environmental Engineering



KIM Korean Institute of Metals & Materials
Metals, Materials



KSME Korean Society of Mechanical Engineers
Machines, Materials



KSBB Korean Society for Biotechnology & Bioengineering
Bioengineering, Food engineering



KICHE Korean Institute of Chemical Engineers



IEIE Institute of Electronics & Information Engineers
Electric, Electronic, Semiconductor



KISE Korean Institute of Information Scientists & Engineers
Data processing, Computer



Conference on Postgraduate-led Research Team Project for the final report

IV. Conclusion and Challenges

IV. Conclusion and Challenges

01

In spite of a small-scale project, it helps graduate students to strengthen **leadership capability** as well as to improve **project management skills** as a project leader

02

Getting professional guidance from an academic advisor and a female industry mentor, participating students are able to enhance **research capacities** and also smoothly enter into R&D fields by utilizing their outcomes.

03

Female students' entry to engineering major is still low but gradually increasing, and also **reducing gender gap** and **qualitative improvement** like continuous increase of MS and PhD degree are encouraging.

04

Collaborating with 8 academic engineering societies, participants have **opportunities to present research outcomes** or **publish papers**.

05

In the era of the 4th industrial revolution, we are trying to more focus on making environment for female students to conduct **engineering-based convergence researches** by cooperating with more diverse STEM academic societies.

06

WISET also intends to **develop global issue projects** with **more participation of global enterprises** and expects to enhance female talents' international competitiveness.

Thank you for your listening

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