

Using Data for Improving Policy Decisions

Korea's efforts to promote women in space

Soyoung Chung, KARI



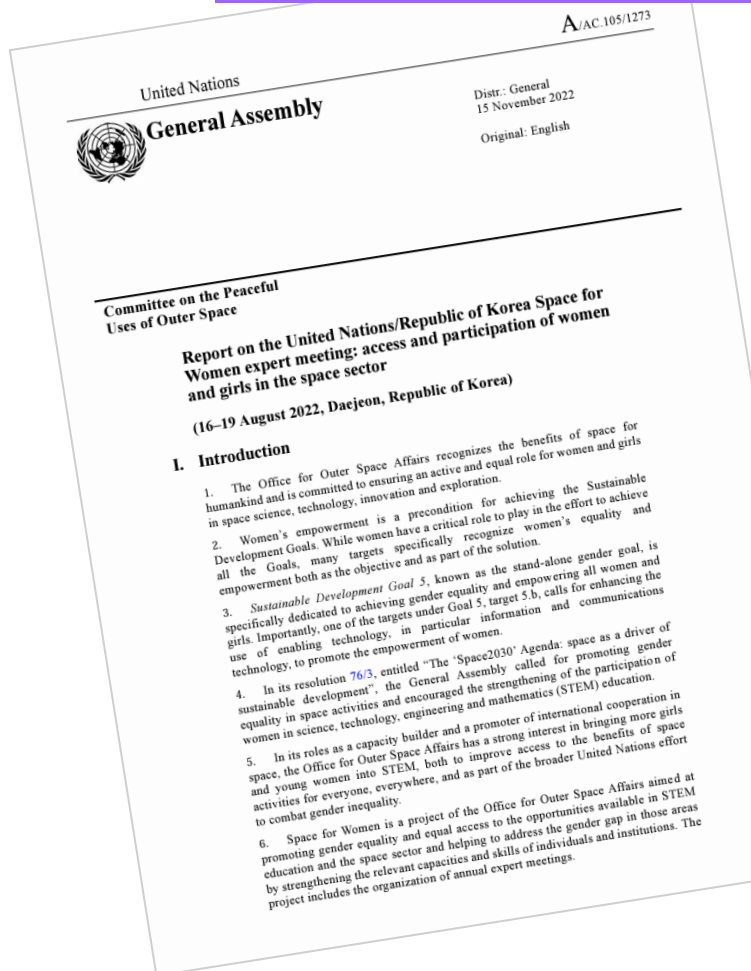
UN/Canada S4W Expert Meeting
Oct 30 – Nov 3, 2023

South Korea successfully hosted S4W Expert Meeting in 2022



Recommendation from the 2022 expert meeting included:

Working Group #3: measuring the participation of women in the space workforce



30. Given the complexity of and discrepancies in existing information, as well as the lack of standard measurement methods and comprehensive data, the development of related guidelines was proposed. These should include the definition of benchmarks; a methodology to ensure the transparent and accurate collection and monitoring of gender-disaggregated data; and the standardization of terminology and indicators to facilitate comparison across countries and institutions. The work conducted during the group discussions had laid the foundation for conducting such an exercise.

31. The preparation of a comprehensive study on women's participation in the space workforce at the global level was suggested as an important step forward. It was recommended that the Office for Outer Space Affairs lead this project, with the support of Member States, which, among other things, would report their countries' metrics on women's participation in the space sector.

32. Standardized and global commitment was emphasized as a crucial element for the success of such an initiative. Building upon the recommendations of previous expert meetings, the idea of an online platform to support voluntary data-sharing between nations on all aspects of gender empowerment in the space sector was reiterated.

Korean signed an agreement with UNOOSA to support a study on women's participation in the global space workforce



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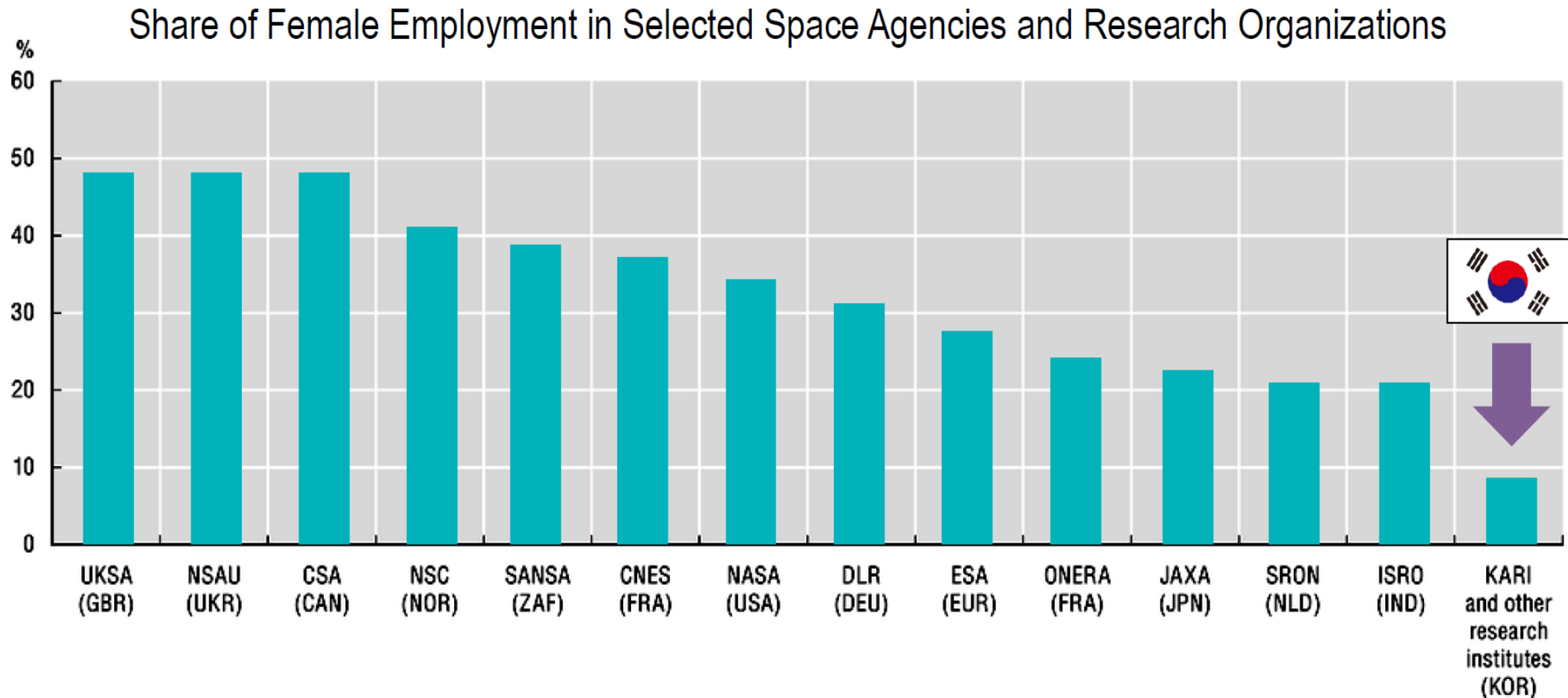
Thanks to the support from MSIT, and with assistance from the Korea Aerospace Research Institute (KARI), UNOOSA will be able to follow up on their recommendations and prepare a comprehensive study on women's participation in the global space workforce. These objectives align not only with the Space4Women mission, but also with the overall objectives of the 2030 Agenda for Sustainable Development of progressing towards gender equality.

The research project will be implemented by UNOOSA over three years. It will start with a quantitative focus, collecting data on the number of women working in space organizations, and will later develop more qualitative aspects to understand the lived experiences of women in this sector. The first results are expected to be presented at the 66th session of the Committee on the Peaceful Uses of Outer Space (COPUOS) in June 2024.

Why did Korea decide to fund this study?

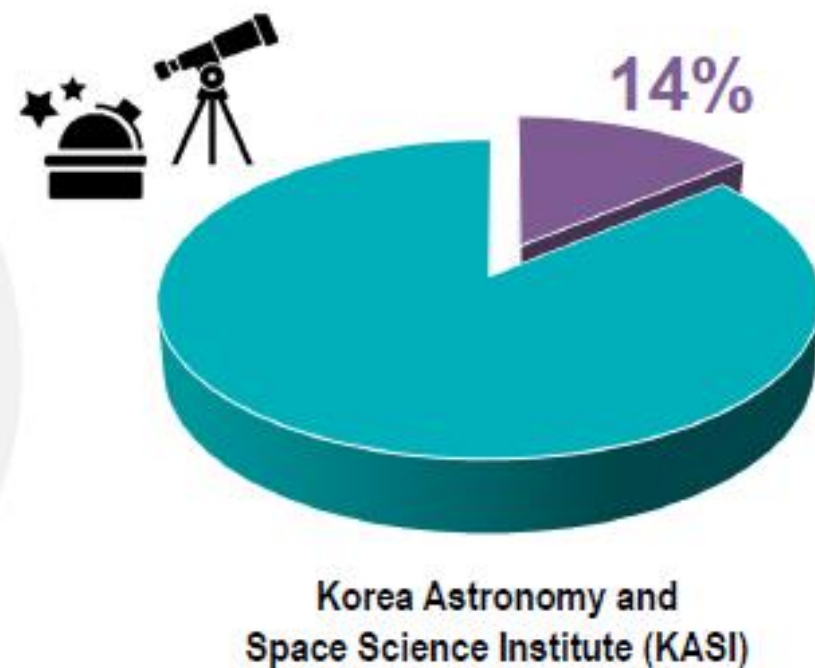
Data plays a critical role in
understanding our reality and
making decisions to improve it

This chart served us a wake-up call for the Korean community



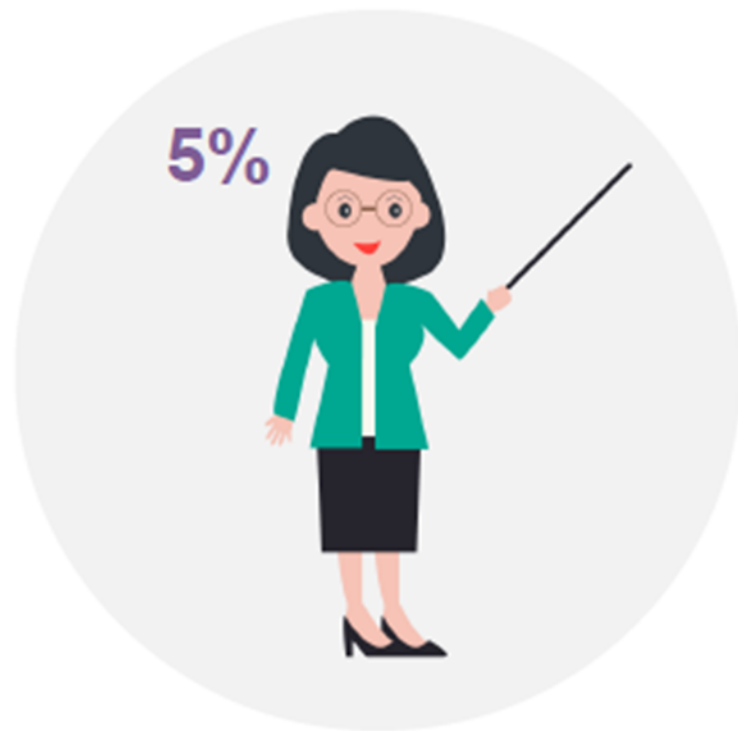
Source: Space Economy in Figures (OECD, 2019)

Share of Female Researchers in Space Research Organizations



* Share of female researchers in Korea's public research organizations : 24.4%

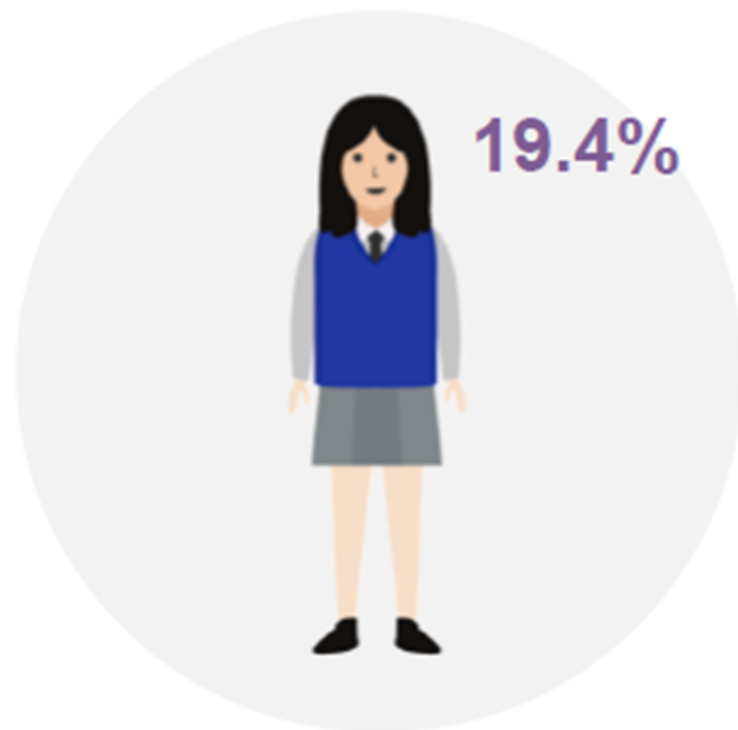
Share of Female Professors in
Space Science and Engineering



* Share of female professors
in STEM field: 18.2%



Share of female graduate students
in Space Science and Engineering



* Share of female graduate students
in STEM field: 30%

The available data indicated that women were not well represented in Korea's space workforce

Better understanding of our reality made us to act



KARI Women's Association



KASI Women's Association



* KARI Women's Association Inaugural Meeting (January 2019)

Empowering Women in Space

- Visibility
- Education
- capacity building & leadership
- Networking
- Policy recommendations

'Special Session on Women' during KSAS – July 2020

- Held at the largest domestic space conference
- Presentations about the status of 'women in aerospace' in Korea
- Professional panel & Student and YP panel
- More than 50% of attendees were male
- Led to establishment of KSAS Committee on Women



라녀 모두 참석 환영!

한국항공우주학회 2020년 춘계학술대회

여성 특별 세션

일시 : 2020. 7. 9 (목) 오후 2:50 ~ 4:30 [100분]
장소 : 제 9발표장 (라일락) [East Tower 2층]

프로그램		
개회	환영사	임효숙 (항공우연여성협의회 회장)
	축사	임원호 (항공우연 원장) 방효충 (항공우주학회 수석부회장)
주제 발표	항공우주와 여성: 우리의 현 위치는?	이서민 (항공우연 여성과학기술인협회) 김현옥 (대한여성과학기술인회 총무이사)
이슈 토론 I	여성 연구자의 일·가정 양립과 경력 개발	패널 : 최남미 (항공우연), 김영화 (국과연) 최은경 (첨문연), 김세미 (한화에어로스페이스) Regina Lee (York University) 모데레이터 : 공윤경 (항공우연)
이슈 토론 II	여학생의 학업과 진로 선택, 직장 구하기	패널 : 강혜연 (KAIST), 임소경 (전북대) 조남석 (한양대), 김예빈 (University of Sheffield) 김예지 (항공우연) 모데레이터 : 임석희 (항공우연)
	와 여성: 우리가 나아 갈 방향	참석자 설문 및 전체 토론 (온라인 Q&A/Polling 플랫폼 활용)

우레그를 해님! 여학생의 학업과 진로 선택, 직장 구하기

강혜연 임소경 김예빈 조남석 김예지

많은 관심과 참여 부탁드립니다~!!

여성협의회 · 정서영 (sychung@kari.ac.kr, 042-850-2065)

WISET Career Mentoring Program – May-Oct 2021



한국 여성과학기술인 지원센터
Korea Advanced Institute of Women in Science, Engineering and Technology

- 6 month online program (6 mentors, 19 mentees – undergraduate engineering students)
- Supported by WISET (Korea Advanced Institute of Women in Science, Engineering, and Technology)
- Introduced industry trends, careers options and job opportunities in the space sector



Space Camp for University Girls (Before Covid)



WISET Online Mentoring (2021)

World Space Week (Women in Space) – Oct 2021

- Lecture series on 'women in space' during WSW
- In collaboration with KARI Academy & Young Astronaut Korea
- In-person event at four national science museums livestreamed
- Joined by Korean astronaut Yi So-Yeon
- Introduced UN's role in space and emerging space issues and topics



우주와 여성 (feat. 우주 폼 아는 언니들)



임석희(한국항공우주연구원 책임연구원)
미래발사체연구단 소속 (나로호 개발 사업 참여)
인하대학교 <공학과 여성> 출강
모스크바국립바우만공대 로켓엔진학과 박사



김현옥(한국항공우주연구원 책임연구원)
국가위성정보활용지원센터 소속
저서 「처음 읽는 인공위성 원격탐사 이야기」
독일 베를린공과대학 환경계획학과 박사



■ Women In Space 여성과학자 특별강연 안내

2021년 세계우주주간 기념 한국행사로 한국과학우주청소년단에서는 국립부신과학관, 국립광주과학관, 국립대구과학관, 국립중앙과학관과 공동으로 여성과학자 특별강연을 개최합니다. 강연은 한국과학우주청소년단(YAK) 유튜브를 통해 실시간으로 시청 가능하며, 많은 참여 부탁드립니다.

- 일시 : 2021년 10월 9일(토), 10일(일) 14:00~15:00
- 장소 : 한국과학우주청소년단 YouTube 라이브
- 주최 : 한국과학우주청소년단, 국립부신과학관, 국립광주과학관, 국립대구과학관, 국립중앙과학관, 항공우주여성연합회
- 후원 : 과학기술정보통신부, World Space Week Association

일시	주관	강사	주제	시청하기
10월 9일(토) 14:00~15:00	국립부신과학관	임석희 김현옥	토크콘서트 「우주 폼 아는 언니들」 - 우주와 여성	YouTube에서 보기
	국립광주과학관	최연주	항공우주와 인공지능	YouTube에서 보기
10월 10일(일) 14:00~15:00	국립대구과학관	최다송	New Space시대, 국방 우주력의 중요성	YouTube에서 보기
	국립중앙과학관	최은경	우주 쓰레기가 온다	YouTube에서 보기

Our activities led to
some initial success

Women's Advisory Committee established at KARI



A Formal Advisory Group to the KARI President

- A bridge between female employees and top management
- Policy recommendations on gender issues

**Safe
Environment**

**Gender
Sensitive
Culture**

**Fair
Recruitment**

Increasing women's participation in space workforce became a stated government policy



4th National Space Development Promotion Plan (2022)

"Initiate a workforce development program specifically targeted at promoting women's participation in the space sector at the national and international level"

Dedicated program to support the development of the female space workforce is established

Hands-on remote sensing education
For high-school girls

Internship program
for university
female students

Capacity-building
for female
researchers



Lesson Learned:

"If you can't measure it,
you can't improve it"

The community set a measurable target: By 2030, achieve the OECD average share of women in space research organization

2030 여성 항공우주 과학자의 Vision

Breaking Barriers Reaching New Heights

성별에 대한 인식개선을 통해 성별 간 장벽을 깨뜨림으로써, 성별 구분 없이 '항공우주 과학자로서' 양성어 합성하여 공존의 목표를 찾아 항공우주 분야의 기술선도국으로서 발돋움 할 것이다. 능력과 성과 등에 있어 각 섹터를 트레킹 의뢰하지 않고 한 사람으로서 본인의 역량, 창의성을 자유롭게 펼치고 청역하는 여자의 여권변경을 맞이할 것이다.

<목표>

- 우리는 여대 세대에 도움이 되는 항공우주 기술 발전국 위해 다양한 데드체코는 구성력 것이다.
- 직업으로서 항공우주 분야 다양성을 발전하고 알릴 것이다.
- 우리는 OECD 기준 평균 이상의 여성 과학자 비율을 만든 것이다.



"Women in Aerospace Vision" drafted at a workshop organized by KARI Academy (2023)

What's next for Korea ?

Over the next three years (2023-2025),
Korea's Ministry of Science and ICT (MSIT)
will fund measurement efforts
as its contribution to promote women in space



Project 1: A Global Study

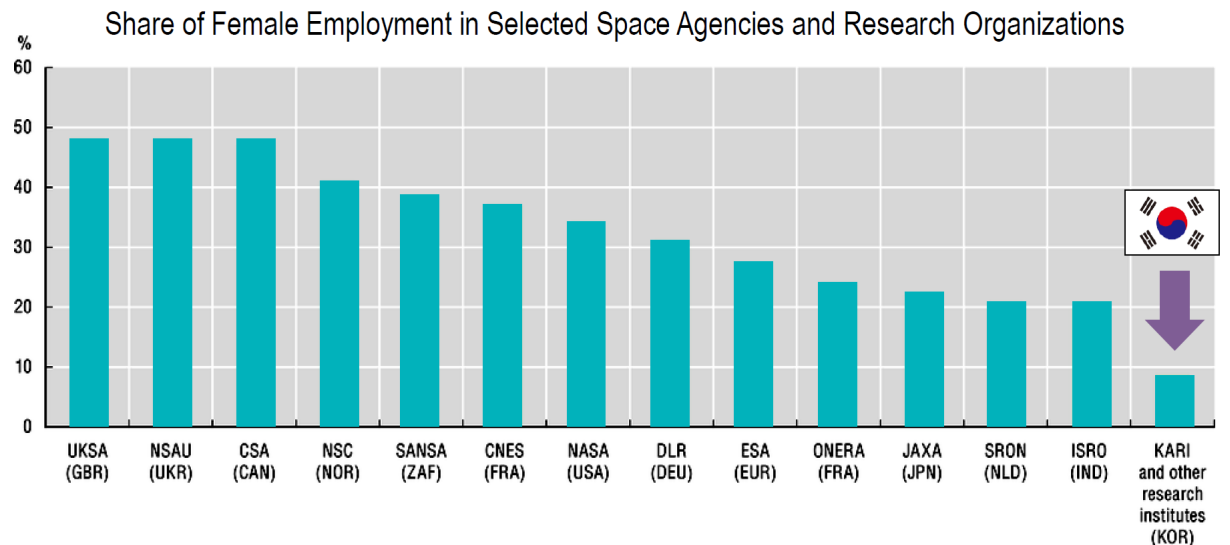
Why UNOOSA?

Access to more than 100 COPUOS Member States and their space organizations to improve inclusivity of data

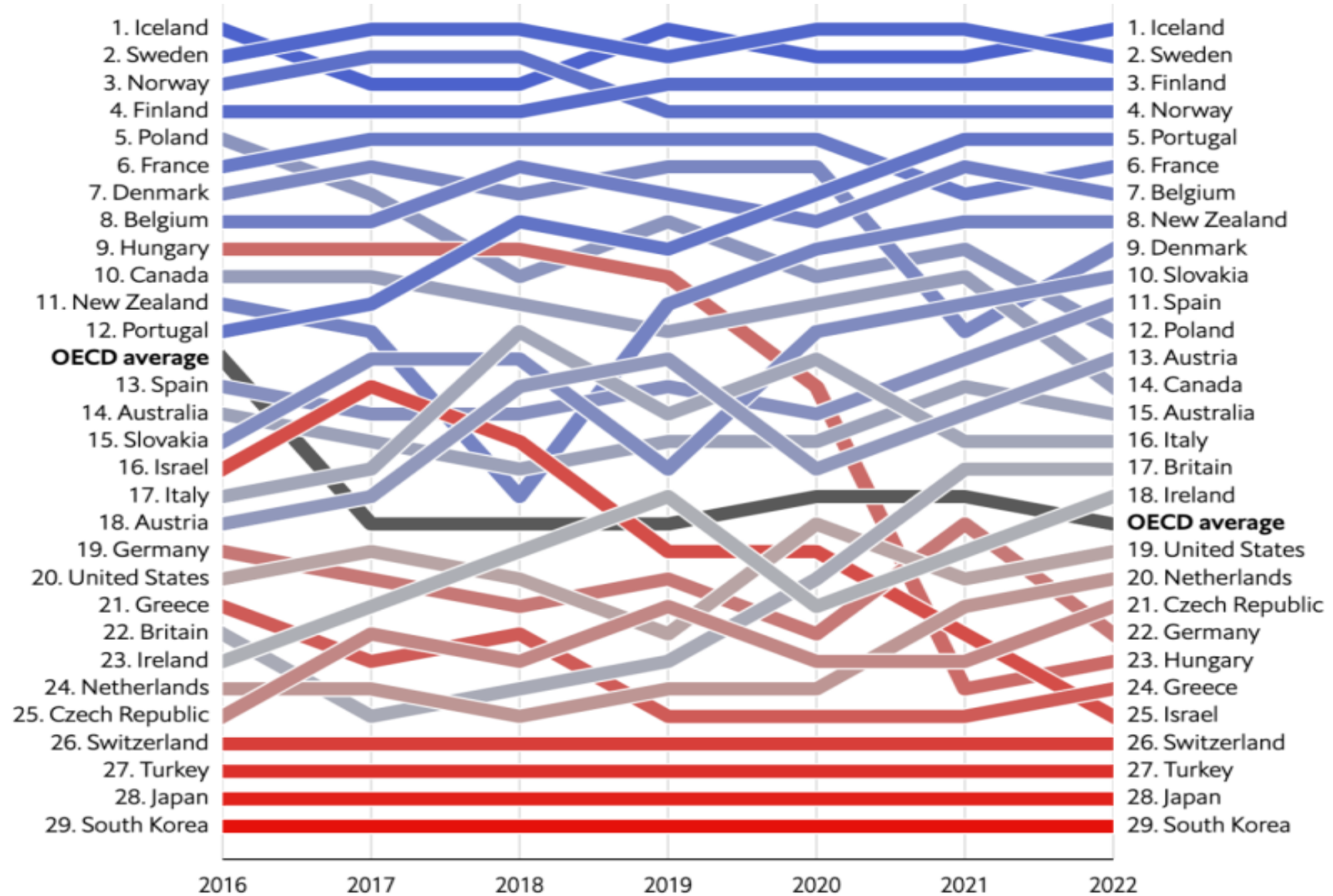


Why International Comparisons?

A simple but powerful tool to communicate and capture the attention of the public and decision-makers at the national level



The Economist's Glass Ceiling Index



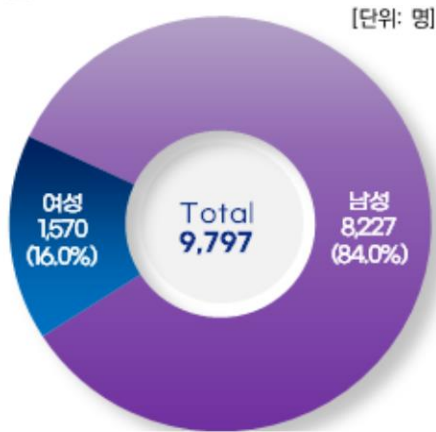
The Existing Measurement Efforts in Korea

Status of the Space Industry Survey



2021년 성별 인력현황

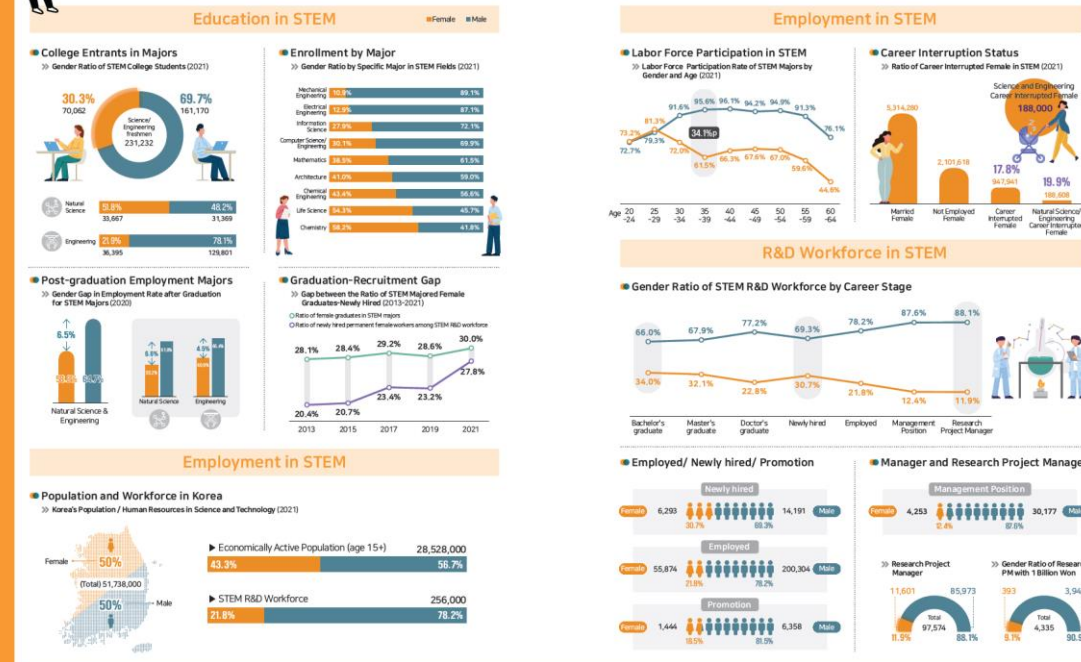
- 남성 8,227명(84.0%), 여성 1,570(16.0%)로 조사됨



	기업체	연구기관	대학
전체	7,317	1,175	1,305
남성	6,207	1010	1,010
여성	1,110	165	295

Report on Women in STEM in Korea

2021 Women and Men in STEM Workforce at a Glance



Are the existing efforts **sufficient?**

Project 2: National Study

To better address the issue

Numbers are important,
but it's not just about numbers

**“Don't fix numbers,
Don't fix women,
Fix the system”**

To measure the system bias

How can we measure the cultural biases
in our society that are not explicitly visible?

**Quantitative data
vs.
Qualitative data**

Perceived inequality vs. Actual inequality

For the past three decades, actors across the public, private and NGO sectors have launched numerous measures to advance gender equality. Though each differs in methodology, scope and intent, they share a common purpose: to build awareness of the stark inequalities women face. But this is insufficient. Inequalities are a function of how people perceive the societies, institutions and organisations in which they live and work. The right to vote was an essential measure of gender equality a century ago, but it is insufficient today. The measurement of inequalities must be continually updated. The best way to do so is by measuring how our perception of inequalities evolves.

Indeed, measuring *actual* inequalities without evaluating *perceived* inequalities does not always give us a good understanding of progress over a given period. Younger generations can often perceive inequalities that may have been relatively invisible to the previous generation. At the heart of a commitment to progress is the hope that when it comes to reducing gender inequalities, each generation has higher standards than the previous one. That explains why *measures of gender inequalities are insufficient if not compared with estimates of our perceptions of those inequalities*. Evidence that any given group perceives growing gender inequalities is a sign that there is more progress to be made.

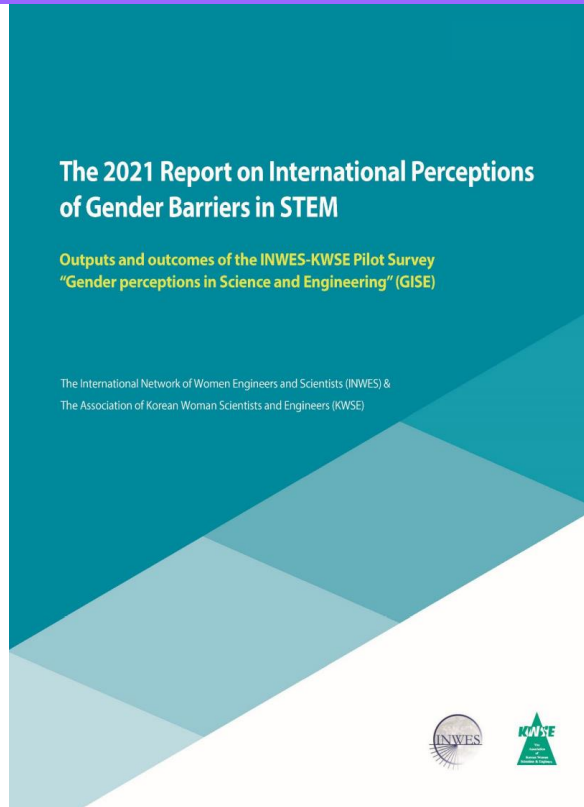
Why measuring the perception of gender equality is-needed

(Source: OECD Forum Posting)

Project GISE

Measuring Gender Barrier Perceptions in STEM

Survey Jointly developed
by KWSE and INWES



The Questionnaire

Gender barriers	Perception of discrimination	① Boys are encouraged more than girls to go into the STEM field.
		② It is more difficult for a woman to get a job in the STEM field than for a man even with the same qualifications.
		③ Becoming a tenured professor, being promoted or becoming a principal investigator is more difficult for female scientists than for male scientists.
		④ Women in STEM generally receive less pay for equal work, compared with their equally-qualified male colleagues.
	Experiences of discrimination	① I have experienced disadvantages in leading or participating in research projects because I am a woman.
		② I have experienced disadvantages in receiving research funds or scholarships because I am a woman.
		③ I have experienced sexual harassment or unfair treatments sometime in my career.
		④ Balancing work and life (marriage and family) has been a handicap for me.
	Gender role stereotype	① Primary breadwinners (who take care of financial obligations) of households should be men.
		② Women are born to have a way of caring children that men are not capable of in the same way.
		③ In order to maintain the order and peace of a family, the husband should have greater power and authority than the wife.
		④ In a relative sense, men are rational while women are emotional and thus, they ought to complement each other by doing what is appropriate for themselves.
Career outlook	I believe things will turn out fine in my future career.	
Policy needs	It is crucial to have strong policy support to solve gender inequality in the STEM field.	
Equality concept	I believe gender equality will be fully achieved only if women are given equal opportunities as men.	



Survey on Gender Barrier Perceptions in Korea's Space Sector

우주분야 젠더장벽 인식조사 (대학원생 이상 남녀 종사자 대상)

0%

우리나라는 제4차 우주개발진흥기본계획에 따라 우주분야 여성 참여 확대를 도모하고 있습니다. 본 설문조사는 과기정통부 우주국제협력기반조성사업 내 <유엔 협업 '우주와 여성' 후속 연구 (여성 실태 조사)> 과제 일환으로 진행되는 것으로, 우주분야 남녀 종사자분들의 적극적인 참여를 부탁드립니다. 설문 결과는 국내 과학기술 여성단체 및 유엔우주위원회(COPUOS)와 공유될 예정이며 추후 국내 관련 정책 수립을 위한 기초 자료로 활용될 수 있습니다.

- 설문 대상 : 우주분야에서 종사하는 남·여 전문인력 (대학원생 포함, 연구소, 대학, 기업 등)
- 설문 기간 : 2023. 10. 23 ~ 12. 22
- 설문참여자에게 소정의 기프티콘 제공

* 본 조사는 대한여성과학기술인회(KWSE)와 세계여성과학기술인회(INWES)가 진행한 Gender Perception in Science and Engineering (GISE) 프로젝트의 설문 문항을 사용하였습니다.

** 조사결과는 통계조사법(제33조 비밀의 보호)에 따라 귀하의 답변 내용과 개인정보를 엄격히 보호하며, 연구목적 이외의 다른 용도로는 일체 사용되지 않으며, 관련 연구 종료 후 해당정보는 즉각 파기됨을 약속드립니다.

Nation-wide Survey Currently Ongoing

- Utilizes the questionnaire developed by KWSE & INWES for GISE project
- Who is Surveyed?: Space professionals (above graduate student level)
- Partnership with academic societies, industry association, space research organizations
- Responses to be collected until the year end
- Result will be analyzed and presented at COPUOS in 2024

Our Project Team

MSIT



Sujin Park

KARI



Soyoung Chung
Nammi Choe
Hyunok Kim
SeokHee Lim

Nayoung Youn
Daehyun Lee
Ami Yun
Kyoung-Suk Lee (KASI)

Advisor



Jung Sun Kim

Summary

- The availability of **data is essential** for understanding the reality and for making well informed decisions.
- What you measure also matters. **It's time to go beyond just measuring numbers** and consider measuring perceptions.
- You cannot just wait for top-down decisions. **Grass-roots efforts** were the driving force behind initiatives in Korea.

Thank you for your attention.

For questions, please contact: sychung@kari.re.kr