

The 58th KAST International Symposium
The 4th AASSA WISE Symposium

WOMEN in STEM Advancing The SDGs in ASIA

Date May 28th, 2026

Venue JW Marriot Dongdaemun Square, Seoul, Rep. of Korea  **YouTube**

Organized by **KAST** 한국과학기술원
The Korean Academy of Science and Technology

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Program

09:00 ~ 9:30 **Registration**

09:30 ~ 9:40 **Opening**

Opening Remarks: So Young Sohn KAST/Yonsei University
Welcome Address: Jin-Ho Chung President, The Korean Academy of Science and Technology
Congratulatory Remarks: Ahmet Nuri Yurdusev President, The Association of Academies and Societies of Sciences in Asia
Congratulatory Remarks: Oh Nam Kwon President, Korean Federation of Science & Technology Societies

09:40 ~ 10:00 **SDG Book Launching**

Chair **Supawan Tantayanan**
SST/Chulalongkorn University
Aura Castillo Matias
NAST PHL/University of the Philippines

10:00 ~ 11:00 **Part 1 Selected Presentations**

SDG 3 Carmencita D. Padilla University of the Philippines Manila
SDG 4 Sharmin Sultana Jahangirnagar University, Bangladesh
SDG 5 Anjana Singh Tribhuvan University, Nepal
SDG 9 Lan Fu The Australian University
SDG 13 Yukiko Hirabayashi Shibaura Institute of Technology, Japan

11:00 ~ 11:30 **Coffee Break**

11:30 ~ 13:00 **Part 2 WISE & SDGs in Korea**

Chair **Sang Geon Kim**
KAST/Dongguk University

Keynote Speaker Aree Moon Korea Foundation for Women in Science, Engineering and Technology
SDG 5 Hyewhon Rhim The Association of Korean Woman Scientists and Engineers
SDG 13 Hee Kim POSCO Research Institute
SDG 13 Jihye Gwak Korea Institute of Energy Research

13:00 ~ 14:00 **Lunch**

14:00 ~ 15:00 **Part 3-1 WISE & SDG5 in AASSA**

Chair **Youngjo Lee**
Director of the AASSA Secretariat

Frances Separovic AAS/University of Melbourne
Nadira Karunaweera NASSL/University of Colombo
Yukari Ito SCJ/Kavli IPMU the University of Tokyo
Aytan Huseynova Azerbaijan National Academy of Sciences

15:00 ~ 15:30 **Coffee Break**

15:30 ~ 17:00 **Part 3-2 WISE & SDGs in AASSA**

Chair **So Young Sohn**
KAST/Yonsei University

Aliya Naheed BAS/International Centre for Diarrhoeal Disease Research
Kadriye Arzum Erdem Gürsan TüBA/Ege University
Natalia Varlamova Mining Institute of FEBRAS
Bushra Ateeq INSA/Indian Institute of Technology Kanpur
Suchana Apple Chavanich SST/Chulalongkorn University

17:00 **Wrap up & Closing**



So Young Sohn

Distinguished University Professor Emeritus
Dept. of Industrial Engineering
Yonsei University, Seoul, Korea
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Technology Foresight, Patent Analytics, Spatial Big Data

Professor Sohn is a fellow of engineering division of the KAST (Korean Academy of Science & Technology) and served as a representative of WISE at the KAST during 2022-2024. Her international appointments—such as visiting scholar at Harvard Kennedy School (2014–2015), University of Cambridge (2008), Imperial College London (2004), and National Institute of Standards and Technology (2000)—reflect sustained global collaboration and knowledge transfer. Currently, she serves as Associate Editor of *Scientometrics Journal*.

The 58th KAST International Symposium on Women in STEM Advancing the Sustainable Development Goals in Asia

Seoul, Korea May 28 2026

A central highlight of the symposium is the launch of the book *Promoting the Women in STEM Advancing SDGs in Asia*, which presents the achievements and leadership journeys of distinguished women scientists across the region. Their work spans health innovation, STEM education advancement, industrial and technological research, digital transformation, green technologies, and climate science. Together, these stories illustrate how women's leadership strengthens scientific excellence while generating tangible societal impact aligned with priority Sustainable Development Goals.

By bringing together twelve AASSA-WISE representatives and four Korean speakers in person, along with five selected Asian women leaders presenting online, the symposium creates a dynamic regional platform for knowledge exchange, policy dialogue, and strategic networking. It encourages cross-border collaboration and highlights the importance of gender-responsive governance within science and innovation systems towards achieving SDGs.

Jointly coordinated with the Association of Academies and Societies of Sciences in Asia and the National Academy of Science and Technology Philippines under the support from the InterAcademy Partnership, the event also serves as the 4th AASSA-WISE Symposium, reinforcing sustained regional collaboration. My deepest gratitude goes to all of those who made this symposium possible.



Supawan Tantayanon

Professor of Chemistry, Chulalongkorn University, Thailand
 Former President, Science Society of Thailand under the Patronage of His Majesty the King
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 Green Chemistry, Sustainability and Science Education.

Dr. Tantayanon is Professor of Chemistry at Chulalongkorn University, Thailand. She has held prominent leadership roles nationally and internationally, including President of the Federation of Asian Chemical Societies. She currently serves as Chair of the Advisory Board on Education and Outreach of the Organisation for the Prohibition of Chemical Weapons and as a member of the IUPAC Executive Board. Her honors include the 2021 IUPAC Distinguished Women in Chemistry or Chemical Engineering Award.

AASSA-WISE Project: “Women in Science, Technology, Engineering and Mathematics (STEM) Advancing SDGs in Asia”

WISE, one of the four special committees of AASSA, is committed to empowering women in STEM across Asia. Between 2022 and 2024, WISE established three flagship initiatives that continue today: the WISE Symposium, the WISE Webinar Series, and the Professor Yoo Hung Kim Young Women Scientists Award.

Building on these efforts, WISE has launched an edited volume titled “*Women in Science, Technology, Engineering and Mathematics (STEM) Advancing SDGs in Asia.*” The book aims to highlight outstanding women scientists, engineers, and innovators whose work significantly contributes to sustainable development, while inspiring future generations of women and girls to pursue STEM careers.

Contributions will be invited from regional Academies and Scientific Societies. Each participating organization will nominate women leaders whose achievements align with a specific Sustainable Development Goal (SDG). Selections will be based on three criteria: Professional Excellence, Contributions to Advancing the SDGs and Societal Impact.

This first volume will focus on five SDGs:

- SDG 3: Good Health and Well-Being
- SDG 4: Quality Education
- SDG 5: Gender Equality
- SDG 9: Industry, Innovation and Infrastructure
- SDG 13: Climate Action

The book will be launched through virtual and in-person events, including panel discussions at the Fourth WISE Symposium in May 2026.

This project reinforces AASSA-WISE’s commitment to strengthening women’s leadership in STEM and advancing sustainable development across Asia.



María Aura Teodora C. Matias

Academician & Professor
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Industrial Engineering, Human Factors & Ergonomics, Quality Management Systems

Dr. Matias is a retired Professor at the University of the Philippines, Metro Manila, Philippines. Her research focuses on human factors and ergonomics, productivity and quality management systems. She has held several leadership roles in academic societies, including the National Academy of Science and Technology Philippines, and has received numerous national and international awards for her contributions to industrial engineering and engineering education. She is an active member of the AASSA-WISE Special Committee since 2017 to the present.

About the Book entitled, “Women in Science, Technology, Engineering and Mathematics (STEM) Advancing SDGs in Asia”

A Framework for Celebrating Transformative Leadership and Innovation

This proposed book on *Women in Science, Technology, Engineering and Mathematics (STEM) Advancing SDGs in Asia*, examines the transformative role of women in advancing the United Nations 2030 Agenda and its Sustainable Development Goals (SDGs). Grounded in the recognition that sustainable development is both interconnected and people-centered, the book highlights how women’s leadership in STEM fields serves as a catalyst for inclusive, resilient, and innovation-driven progress across Asia.

The introductory chapter situates STEM as a foundational enabler of the SDGs, emphasizing that gender equality is not only a standalone goal but also a cross-cutting requirement for achieving health, education, industry, and climate targets. Subsequent chapters present curated profiles of women leaders advancing SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 9 (Industry, Innovation and Infrastructure), and SDG 13 (Climate Action). Through narratives of scientists, engineers, educators, and entrepreneurs, the book demonstrates how women’s expertise generates socially responsive innovations, strengthens institutions, and addresses persistent inequities in rapidly developing yet diverse Asian contexts.

The concluding chapter synthesizes these insights, underscoring the mutually reinforcing relationship between women’s empowerment and sustainable development. It argues that empowering women in STEM is both a moral imperative and a strategic necessity for accelerating progress across interconnected goals. By documenting leadership, confronting structural barriers, and articulating a forward-looking call to action, the book offers a compelling framework for embedding gender-responsive innovation at the heart of Asia’s sustainable development agenda.

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Part 1



Carmencita D. Padilla

National Scientist
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newborn screening, rare diseases, birth defects

Dr. Carmencita D. Padilla is Professor Emeritus of College of Medicine, University of the Philippines Manila. Dr Padilla is a pediatrician and geneticist responsible for the lobby efforts for the passage of the Newborn Screening Act of 2004 (Republic Act No 9288) and the Rare Diseases Act of 2016 (Republic Act No 10747). She initiated newborn screening in the country and has developed a sustainable system that serves as a model for developing programs.

Newborn screening: the mission of saving babies from mental retardation and death

Newborn screening (NBS) is a universally accepted public health program aimed at the early identification of infants who are affected by certain genetic, metabolic or infectious conditions. With screening, early diagnosis and prompt treatment, newborns at risk are saved from consequences of mental retardation and death. NBS is a response to Sustainable Development Goal 3 (SDG 3) as it focuses on ensuring healthy newborns, fostering a healthier future generation. In the Philippines, NBS began as a research project in 1996 in 24 hospitals in the midst of challenges of setting up a health program in a low-middle-income-country. It was mandated by law in 2004 (Republic Act No. 9288). In the next 30 years, this program (led primarily by women) is implemented in 7200+ hospitals and birthing centers across the archipelagic country which has 7600+ islands. Samples are sent to seven NBS centers. Patients with confirmed diagnosis are referred to NBS continuity clinics for lifetime follow-up. The program screens for 29 disorders, is covered by social insurance and covers 97% of its annual births (2025). To date, more than 300 000+ newborns have been saved. The success of this program is anchored on the dedication and commitment of the health workers engaged in the program. The continued success is made possible with the able mentoring of the next generation of health workers. (www.newbornscreening.ph)



Sharmin Sultana

Professor
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 Plasma Physics, Nonlinear dynamics, Amplitude modulation

I have completed my BSc (Hons.) and MSc (Thesis) degrees in physics from Jahangirnagar University, Dhaka, Bangladesh, in 2002 and in 2003, respectively. I have successfully completed my PhD degree from Queen's University Belfast, UK, in Plasma Physics in 2012.

My research interest includes nonlinear phenomena, mainly electrostatic (ES) and electromagnetic (EM) waves in the form of localized nonlinear wavepackets, solitary, and shock waves in different plasma contexts. I have already published more than 90 articles in peer reviewed international journals and total citation exceeds 2100.

Contribution to SDG 4 in Bangladesh through Research-Led Education in Nonlinear Plasma Physics

Achieving Sustainable Development Goal 4 in Bangladesh requires strengthening higher education through the integration of advanced research and effective teaching practices in STEM fields. This work presents contributions to quality education by incorporating nonlinear plasma physics—particularly solitons, shock waves, and envelope soliton dynamics—into university-level teaching and research supervision.

By embedding complex nonlinear phenomena into undergraduate, MSc, and PhD programs, students develop strong analytical, mathematical, and computational skills. Research topics such as ion-acoustic solitons, dust-acoustic waves, and modulational instability provide opportunities for students to engage with contemporary scientific problems relevant to space and laboratory plasmas. This approach helps bridge the gap between theoretical learning and practical research in the context of developing countries.

Supervision of postgraduate students plays a crucial role in building research capacity in Bangladesh, enabling young scientists to contribute to international publications and collaborations. The interdisciplinary framework, combining physics and applied mathematics, enhances students' employability and adaptability in diverse scientific and technological sectors. This initiative supports inclusive and equitable quality education, fostering a skilled workforce to advance sustainable scientific development in Bangladesh.



Anjana Singh

Prof. Dr.
Central Department of Microbiology, Tribhuvan University
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AMR, Water Microbiology, Women in Science

Prof. Dr. Anjana Singh is a role model in Nepal for girls & young women in science and is an active coordinator of Women Scientists Forum Nepal. She has been honoured by 14 awards for her career in science. Played an active role of AASSA-WISE for two terms from 2015-2019. She has been nominated as The World Academy of Sciences Fellow with more than 152 national and international publications.

My successful story as woman in science from South Asia

Prof. Dr. Anjana Singh coming from a middle class family and a house member of a joined family in a traditional Newar family in Nepal is a role model in Nepal for girls and young women as she has played a dynamic role supporting and mentoring young scientists. She has been honoured by 14 awards, where one of them is Crown Prince Young Scientist Award, Nepal Academy of S&T (2005). She is a gold medalist and has received Aishwarya Vidya Padak for standing top among girl students in Bachelors in Science (1990). Played as an executive member of AASSA-WISE for two terms from 2015-2019. Recently nominated as TWAS Fellow. As an active coordinator of Women Scientists Forum Nepal she has conducted various activities involving girls and young women. Actively involved in an ideation program in collaboration with UNESCO to bring together women from various STEM disciplines to collaboratively create an innovative and comprehensive platform (website) that empowers and supports women in science that address challenges, provide resources, and foster a community for women in STEM fields (2024). She has National/international peer reviewed publications-152, including books/book chapters, edited book; General and Proceedings Publication and abstracts published. Supervised Masters' theses-112; PhDs supervised/co-supervised 7, ongoing 1. She is a peer reviewer of 12 journals and the chief editor of University journal (Journal of Institute of Science and Technology). She is a perfect presentable role model for girls and women in the country and still actively involved in research and mentoring women in science.



Lan Fu

Professor
The Australian National University
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III-V semiconductors, optoelectronics, chemical sensors

Lan Fu is a Professor and Head of the Department of the Electronic Materials Engineering at the Australian National University. Lan Fu's main research interests include design, fabrication and integration of optoelectronic devices such as LEDs, lasers, photodetectors and solar cells, as well as chemical sensors, based on low-dimensional III-V compound semiconductor structures.

Nanowire Breath Sensors for Personalised Health Monitoring: Integrating Advanced Technology with Inclusive Innovation

Advances in semiconductor materials, devices and nanotechnology are opening opportunities for addressing critical challenges in healthcare and environmental monitoring. For example, diabetic ketoacidosis (DKA) is a life-threatening acute complication of diabetes characterized by the accumulation of ketone bodies in the blood. Breath acetone, a ketone, directly correlates with blood ketones. Therefore, monitoring breath acetone can significantly enhance the safety and efficacy of diabetes care. In this talk, I will present our recent work in the development of III-V semiconductor nanowire-based ketone sensors, enabling highly sensitive and selective detection of breath ketone (acetone) at room temperature. I will also present our current effort, in collaboration with industry partners, to translate this research into a portable breath-testing device, the Ketowhistle, for non-invasive ketone monitoring in people living with diabetes, particularly for the prevention of DKA.

Beyond technical innovation, I will discuss the importance of inclusive and collaborative research environments in driving impactful science. Through engagement with early-career researchers, women in STEM, and interdisciplinary teams, this work highlights how capacity building and diversity can be strengthened in advanced technology development. It demonstrates how cutting-edge semiconductor technologies, combined with inclusive scientific practices, can deliver transformative solutions for healthier communities and a more sustainable future.



Yukiko Hirabayashi

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Hydrology / Climatology

She received her Ph.D. in Engineering from the Graduate School of Engineering, the University of Tokyo. After serving as an Assistant Professor at the University of Yamanashi and an Associate Professor at the University of Tokyo, she is now a Professor at Shibaura Institute of Technology. She has received the IAHS Tison Award, the JSPS Prize, and the MEXT Science and Technology Award. Her research field is hydrology, with a focus on predicting changes in the global water cycle under climate change.

Water, Climate Change, and the Need for Diverse Perspectives in STEM

As climate change progresses, many regions of the world are expected to experience increases in heavy rainfall, flooding, and drought. My research group uses numerical simulations to clarify the impacts of projected climate change on the water cycle, water resources, and water-related disasters, while also examining adaptation options and their cost-effectiveness.

Some of these research findings have been cited in the assessment reports periodically issued by the Intergovernmental Panel on Climate Change (IPCC), and have contributed as scientific evidence for policymakers around the world in understanding the current state of climate change, its future outlook, and the measures needed to address it. The preparation of these assessment reports involves broad participation by climate scientists as well as researchers from the natural sciences, humanities, and social sciences from many countries. At the same time, however, this process still faces important challenges. In fact, it has been reported that women, non-native English speakers, and minority authors have sometimes been constrained by institutional barriers during the preparation of these reports. These issues have been studied, shared more widely, and are gradually being addressed through ongoing efforts.

In addition, although climate science has a relatively higher presence of women researchers than some other STEM fields, in my own area of expertise—engineering and civil engineering—the number and proportion of female students and women researchers remain low. To respond effectively to the impacts of climate change, we need diverse people to participate and contribute to solutions from multiple perspectives. I sincerely hope that young women in Japan and across Asia will find this field attractive and choose to become part of it.

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Part 2



Aree Moon

President / Distinguished Professor
WISET(Korea Foundation for Women in Science, Engineering and Technology) /
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Breast cancer Invasion/Migration, Ras isotype-specific signaling, Tumor microenvironment

Dr. Moon is the President of WISET and a member of the UN 10-Member Group to promote STI for the SDGs. She also chairs the Social Committee of the National Commission on Sustainable Development. As a distinguished biochemist specializing in breast cancer, she was recognized as "Female Scientist of the Year" in 2021. She is a prominent leader dedicated to empowering women in STEM and advancing global sustainable development goals.

Empowering Women in STEM: Pathways to Advancing SDGs in Asia

As Artificial Intelligence (AI) rapidly transforms our world, achieving the UN Sustainable Development Goals (SDGs) relies heavily on the power of Science, Technology, and Innovation (STI). However, women's representation in STEM remains low across the Asia-Pacific region, with women comprising only 23.9% of researchers—notably below the global average of 29.3% (UNDP, 2024). This disparity is driven by the "leaky pipeline," where systemic barriers and cultural biases continue to drain female scientific talent, undermining inclusive and sustainable growth in Asia.

Dr. Aree Moon addresses these challenges by leveraging her scientific insights to drive evidence-based policy reform. As a distinguished biochemist specializing in breast cancer, she understands how diverse perspectives improve the reliability and social impact of research. Additionally, as a professor at Duksung Women's University for over 30 years, she has demonstrated a lifelong commitment to empowering young women in STEM. Her leadership as President of WISET and a UN 10-Member Group expert allows her to integrate Gender Equality (SDG 5) into STI frameworks at both national and international levels.

In this keynote, Dr. Moon will highlight the essential role of women's leadership in STEM for achieving the SDGs in the AI era. She will examine the digital gender divide and structural barriers limiting women's participation, while presenting actionable policy recommendations to foster a more inclusive innovation ecosystem in Asia. Ultimately, this presentation offers a roadmap to transform barriers into policy solutions, ensuring STI drives a future that leaves no one behind.



Hyewhon Rhim

Principal Researcher
Korea Institute of Science and Technology
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Alzheimer's disease, Depression, Policies in women scientists

Dr. Rhim is a principal researcher at Korea Institute of Science and Technology, Seoul, Korea. Her research focuses on brain diseases such as Alzheimer's diseases and depression. She has held leadership positions in academic societies, including President of the Association of Korean Woman Scientists and Engineers and President of the Korea Society of Brain and Neural Science. Her contributions have been recognized with several prestigious awards, including the Presidential Commendation and the Science and Technology Merit Medal, highlighting her significant impact on science and society.

Growth and Challenges of Women Scientists: A Journey through Neuroscience, Leadership, and Policy

This presentation elucidates the multifaceted trajectory of a female neuroscientist, exploring the intersection of rigorous academic research, institutional leadership, and science policy. The talk first outlines foundational investigations as a neuroscientist at the Korea Institute of Science and Technology (KIST) into the mechanisms of neurodegenerative diseases and depression, highlighting the translation of fundamental neuroscience into clinical interventions through the study of O-GlcNAcylated protein modification, serotonin receptors, and natural compounds.

Beyond bench research, the session examines the distinct challenges and growth paradigms for women in demanding scientific disciplines. Drawing upon the speaker's tenure as the first female director of KIST's Future Convergence Strategy Center, the narrative underscores the critical role of women scientists in breaking institutional barriers and advancing national convergence policies.

Finally, the presentation addresses the broader societal impact of scientific leadership. By detailing strategic engagements with the National Research Foundation of Korea (NRF) and executive roles, including President of the Korea Society of Brain and Neural Science and the Association of Korean Woman Scientists and Engineers (KWSE), the talk provides a comprehensive vision. Ultimately, echoing the core ethos of Sustainable Development Goal 5 (SDG 5), it seeks to empower the next generation of women scientists to navigate career challenges and assume transformative leadership roles.



Hee Kim

Research Fellow (Former Executive Vice President, Chief of Carbon Neutral Strategy, POSCO Holdings)
POSCO Research Institute (POSRI), Seoul, Republic of Korea

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Industrial decarbonization; Hydrogen-based steelmaking (HyREX); Climate policy & just transition

Hee Kim is a pioneering leader in industrial decarbonization who began her career as the first female engineer in Korea's steel industry, advancing through steelmaking, production technology, and plant operations to serve as Executive Vice President and Chief of Carbon Neutral Strategy at POSCO Holdings. She is currently a Research Fellow at the POSCO Research Institute, where she draws on her experience in elevating Hydrogen Reduction Steelmaking (HyREX) to a national strategic technology and contributing to the development of steel sector carbon-neutral laws and policies to advise and conduct research on industrial decarbonization and a just transition.

From the First Woman Engineer in Korean Steel to Net-Zero Leadership: Lessons from Industrial Decarbonization and Gender Diversity

This presentation traces the journey of the first woman engineer in Korea's steel industry, from entering an integrated steelworks to leading the carbon-neutral strategy of a global steel company and influencing national frameworks. Early experience of working and making technical decisions within a male-dominated culture and structural constraints became the foundation for a leadership style grounded in deep understanding of processes and data, and in the ability to reconcile diverse perspectives.

Building on this foundation, the speaker served as Executive Vice President and Chief of Carbon Neutral Strategy at POSCO Holdings and as a Research Fellow at the POSCO Research Institute, contributing to elevating Hydrogen Reduction Steelmaking (HyREX) to the status of a national strategic technology and to shaping the steel sector's carbon-neutral roadmap and related legislation and policy. In developing 2050 net-zero scenarios, energy and hydrogen infrastructure plans, and investment strategies, she worked to connect the realities of industrial sites with national policy goals and international climate rules.

The presentation will highlight how a technology-and-policy package centered on HyREX has been translated into concrete industrial decarbonization outcomes, and how leadership grounded in plant-level experience offers strengths in risk management, stakeholder collaboration, and just transition. It will also discuss what conditions are needed for Asia's heavy industries to maintain competitiveness while achieving climate neutrality and social equity.



Jihye Gwak

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Net-Zero, Renewable Energy, Photovoltaics

Dr. Jihye Gwak is a research scientist with extensive experience across industry, government, and academia, and serves as Korea ExCo member of the IEA PVPS TCP. She is a member of the Presidential Commission on Climate Crisis Response and previously served on the Presidential Advisory Council on Science and Technology. At KIER since 2005, she has held leadership roles in photovoltaics and renewable energy research and has led numerous collaborative projects.

Photovoltaic Technology for the Energy Transition and SDGs

Achieving the SDGs, particularly those related to affordable and clean energy as well as climate action, requires a rapid transformation of the global energy system. The transition toward low-carbon and sustainable energy sources has become a critical global priority. Renewable energy plays a central role in this transition, with solar photovoltaic (PV) technology recognized as a major contributor to greenhouse gas (GHG) emission reduction and a key technology for achieving net-zero targets.

Energy policies in many countries, including Korea, increasingly prioritize climate crisis response and energy security. To meet these objectives, governments are accelerating the expansion of renewable energy—particularly solar PV and wind—while promoting regulatory reforms, cost reduction, and power system transformation. Against this backdrop, assessing renewable energy deployment and GHG mitigation potential is essential.

The Korea Institute of Energy Research (KIER), a leading government-funded research institute, supports these national priorities by systematically evaluating renewable energy deployment and GHG mitigation pathways. Advanced PV technologies play a significant role in enhancing mitigation potential. KIER has contributed to technological leadership across the PV value chain and plays a central role in innovation through strong industry–academia–research collaboration.

This presentation provides an overview of PV technology aligned with Korea’s policy direction and KIER’s key activities. These include the introduction of the Center for Solar PV Technology (CAST), an open innovation platform supporting industry collaboration, technology validation, and the advancement of PV technologies, as well as ongoing efforts in the development of next-generation solar technologies and related assessment frameworks.

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Part 3-1



Frances Separovic

Distinguished Professor Emeritus

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biophysical chemistry, membrane biophysics, antimicrobial peptides, nuclear magnetic resonance

Dr Frances Separovic is Foreign Secretary of the Australian Academy of Science and professor emeritus of chemistry at the University of Melbourne. Her research focus is the structure of membrane-active peptides at the atomic level. She has held several leadership roles in international societies, including International Union of Pure & Applied Chemistry and InterAcademy Partnership, and was inducted into the Victorian Honour Roll of Women and appointed an Officer of the Order of Australia.

Progression Towards Gender Equity in STEM in Australasia

Advancing gender equity in science, technology, engineering and mathematics (STEM) is central to achieving the Sustainable Development Goals (SDGs), particularly across the Asia–Pacific region where shared challenges include climate change, disaster resilience, public health and sustainable development. Drawing on experiences from Australia and the broader Australasian region, this presentation reflects on progress made, persistent structural barriers, and lessons learned in advancing women’s participation and leadership in STEM.

While women now participate strongly in STEM education at early career stages, they remain under-represented in senior academic, leadership, and decision-making roles. These disparities reflect systemic factors such as career interruptions, bias in recruitment and evaluation, limited access to mentoring, and workplace cultures built around narrow career models. The presentation highlights approaches that have supported progress, including recognition of women’s excellence through awards, system-level equity initiatives, flexible career pathways, and structured mentoring and regional networks.

Examples of progress towards gender equity in STEM from Australia and the Pacific — including the election of women as Fellows of the newly established Pacific Academy of Sciences — demonstrate how recognition and leadership visibility can strengthen women’s contributions to science and to the SDGs. The presentation emphasises that gender equity is not a problem to be solved once, but an ongoing process requiring sustained leadership, collaboration, and commitment across the region.



Nadira Karunaweera

Professor
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vector-borne diseases, malaria, leishmaniasis

Nadira is the Chair Professor of Parasitology, Faculty of Medicine, University of Colombo, Sri Lanka, and an honorary Visiting Fellow at Harvard School of Public Health, USA. Her research focuses on tropical diseases, with special emphases on vector-borne parasitic diseases. She has held several leadership roles in scientific bodies, including the National Academy of Sciences of Sri Lanka and has received numerous national and international awards for her scientific contributions.

Gender Equality in Sri Lankan Higher Education: Insights from National Datasets within the SDG Framework

Nadira Karunaweera, Rajika Dewasurendra, Vidyani Kulatunga
Department of Parasitology, Faculty of Medicine, University of Colombo, Sri Lanka

Gender equality in higher education is crucial to achieving the United Nations Sustainable Development Goals (SDGs), particularly SDG 5 (Gender Equality) and SDG 4 (Quality Education). This study examines the current view of male and female participation in Sri Lankan higher education, highlighting their academic role and university student enrollment. The analysis is based on published national data from Sri Lankan university statistics (2010-2023) and National Science Foundation (2004-2022). The findings show a mixed pattern of progress with a persistent gender equality in Sri Lankan higher education. Male students have been outnumbered by female students in several undergraduate disciplines (Biological and Social sciences), and the partaking in postgraduate research programs is increasing, particularly in Natural and Agricultural sciences.

In academic staff, females are well represented at early career stages and frequently outnumber men among Lecturers and Assistant Lecturers. Senior Lecturer level represents a good balance, approaching gender parity. Professor and Chair Professor levels are underrepresented by women, where they typically constitute less than one-third of positions. This pattern reflects a leaky pipeline with female participation declining at higher academic levels, reinforced by fewer doctoral qualifications and limited presence in national scientific leadership. Despite strong entry into academia, structural barriers hinder advancement, focusing the need for targeted mentorship, leadership development, and improvement of support services with relevant policy changes.



Yukari Ito

Professor, Deputy Director
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Singularity, Crepant resolution, McKay correspondence

Prof. Ito is a Professor of Kavli Institute for the Physics and Mathematics of the Universe at The University of Tokyo, Japan. Her research focuses on quotient singularity and the crepant resolution for McKay correspondence in Algebraic Geometry. She is a member of Science Council of Japan and is an active member of the AASSA-WISE Special Committee since 2022. She is also a president of Asian-Oceanian Women in Mathematics.

Toward gender equality in STEM in Japan

In Japan, despite the implementation of numerous measures to increase women's participation in fields related to science and technology, the number of women engaging in science remains low, and the growth in their representation has been slower compared to other countries. In particular, although Japan's primary and secondary education ranks at a high international level for both boys and girls, girls begin to turn away from mathematics and science subjects at an early stage in terms of their attitudes and interests. Many studies suggest that this situation is influenced by deeply rooted gender biases in society, such as the beliefs that "girls are not good at mathematics and science" or that "science and engineering professions are not suitable for women."

In this talk, I will discuss several initiatives aimed at increasing the number of women in STEM fields in Japan. I will also introduce reports and recommendations issued by the Committee on Gender Diversity in STEM fields of the Science Council of Japan, which propose measures to improve this situation.

Recently, the International Science Council reported that the Science Council of Japan increased the share of women among its members from 3.3% in 2000 to nearly 39% in 2025. Although the Council's membership is not limited to STEM fields, 39% is a remarkably high proportion. I would also like to comment on this development.



Huseynova Aytan

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Geology, Mud Volcanism, Environmental Monitoring

Dr. Aytan Huseynova holds a PhD in Earth Sciences and is a researcher specializing in geodynamics, mud volcanism, and environmental monitoring. Her work focuses on the geochemistry of mud volcano fluids, greenhouse gas emissions, and the use of modern technologies, including drones and satellite data. She has participated in national and international projects and authored numerous publications. Dr. Huseynova serves as Deputy Head of the Department of International Relations and Collaboration with Scientific Organizations of the Presidium of the Azerbaijan National Academy of Sciences.

Advancing Gender Equity in STEM: The Case of Azerbaijan

Women's participation in science and society in Azerbaijan dates back to the 13th–15th centuries, when noblewomen were engaged in literature, poetry, and education. Poets such as Mahpeyker Khanum and Bahar Khanum organized cultural circles and contributed to intellectual life, demonstrating early involvement of women in public and educational spheres.

In the 19th–20th centuries, institutional support expanded, and the first schools for girls were established, among them the first Muslim girls' school in Baku, founded in 1901 by Zeynalabdin Taghiyev. Women began studying not only literature and the arts but also natural sciences, mathematics, medicine, and engineering, laying the foundation for future engagement in STEM disciplines.

In 1918, women in Azerbaijan were granted full voting rights, placing the country among the early adopters of women's suffrage in the post–World War I period (e.g., Germany, 1918; the United Kingdom, 1918; the United States, 1920; Turkey, 1934; India, 1947), and making it the first Muslim-majority country to introduce full women's suffrage.

Today, women are active in STEM fields such as geology, ecology, information technology, medicine, and engineering. State programs and international collaborations support professional development and research related to sustainable development, climate studies, and digitalization. In 2025, the President of the Republic of Azerbaijan approved the National Action Plan on Ensuring Equality of Women and Men for 2026–2028, which includes measures aimed at expanding women's participation in the economy, employment, education, and decision-making processes, strengthening institutional mechanisms for gender equality.

WOMEN
in **STEM**
Advancing
The **SDGs** in **ASIA**

Part 3-2



Aliya Naheed

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Epidemiology, Health Systems, Digital Health

Dr. Naheed is a Senior Scientist at icddr,b in Bangladesh. Her research focuses on Non-Communicable Diseases, particularly focusing on health and technology innovations for strengthening primary care at low cost at the nexus of the environmental challenges. She has played significant leadership roles in several scientific missions and building research capacity in South Asia, particularly women in science. She has contributed in developing many technical guidelines of global importance including treatment protocols and research ethics. She has received numerous national and international awards for her outstanding contributions to public health and medical sciences of humanitarian causes, namely the *BAS Sultan Ahmed Choudhury Science and Technology Gold Medal* and the *BMJ Award South Asia*. Dr. Naheed is a *Fellow of the World Academy of Sciences* and *Fellow of the Bangladesh Academy of Sciences*.

The Present and The Future of The Aging Population Health in South Asia: Who Cares?

South Asia is experiencing a rapid rise in older population aged 60 years and above. While this demographic shift reflects public health progress, it also poses major challenges for health systems, particularly the low- and middle-income countries that are not adequately prepared for tackling ageing-related health and other conditions. The rapid demographic shift in South Asia marks a transition from a "demographic dividend" to a complex societal challenge that demands immediate systemic reform. To prevent aging from becoming an overwhelming socio-economic burden, the region must bridge the gap between policy and practice by integrating geriatric care into primary health systems and strengthening social safety nets. However, country specific knowledge is essential for addressing systemic gaps for strengthening primary healthcare systems and enhancing social protection mechanisms that are critical for achieving SDG 3, SDG 1, and SDG 10 to ensure healthy and dignified ageing. By prioritizing "active aging" linking through digital health innovations, South Asia can transform this vulnerable population into a productive "silver dividend" and secure a healthy future for the elderly people as a vital step towards achieving social equity and long-term national stability for achieving sustainable development goals in South Asia.



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Biosensors based on waste-derived innovative materials, sustainability, healthcare applications

Prof. K. Arzum Erdem Gürsan is a Professor at Ege University, Izmir, Turkey and the principal investigator at the research team @nanoBioSensLab. Her research is centred on the development of novel transducers and chemical and biological recognition systems by using different nanomaterials for the development of integrated analytical systems for environmental monitoring, food safety, industry and biomedical monitoring. She has held several roles as a committee member in national and international academic societies, including, TÜBA, TÜBİTAK, AASSA-WISE, and received national and international awards for her contributions to chemistry and health sciences.

Advanced biosensor technologies developed by sustainable materials with applications

Biosensors are small devices that can enable selective and sensitive analysis of specific target analyte. The advantages of biosensors compared to traditional analysis methods are that they perform sensitive and selective analysis, reach low detection limits, are inexpensive and easy to use. Recently, there have been many studies on development of advanced biosensor technologies using sustainable eco-friendly materials with their applications to diagnosis of diseases, environmental monitoring, and biomedical research. The main aim of these studies is to identify the analytes, infections, toxins, and environmental contaminants etc. in a sensitive, selective, and quick manner. With continuous enhancement, biosensor technologies designed by sustainable materials may evolve from laboratory demonstrations to practical applications, significantly advancing green electronics and promoting a sustainable society.

Future research topics are suggested to develop sustainable sensor technology, and challenges in improving sensor material characteristics and striking a balance between degradation and functional performance are explored. The importance of advanced sensors in sustainability is highlighted in this study, which also highlights recent developments.

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Development of some alternative energy sources

Geothermal resource development is a rapidly growing area of global energy. Over the past 50 years, the installed capacity of geothermal power plants worldwide has increased more than sevenfold. Direct use of thermal waters for heating residential and industrial buildings is also growing, and geothermal fluids are attracting attention as a source of valuable chemical components and compounds. Currently, Russia's share of global geothermal power generation is only 0.5%, and in direct use, 0.4%. However, interest in the real sector of the economy is growing, and there are some developments that can be used to develop the scientific and technical basis for implementing geothermal projects.

Russia has considerable experience designing and operating geothermal power plants. The first such facility, the Pauzhetsky Geothermal Power Plant in Kamchatka, was commissioned in 1966. In 1999 and 2003, respectively, the Verkhne-Mutnovsky GeoPP and Mutnovsky GeoPP-1, also located in Kamchatka, were commissioned. Over the years, various issues have been identified that lead to instability in geothermal well operation. A universal solution to these problems currently exists. However, research conducted by scientists has allowed them to study the geothermal reservoir and the processes occurring within it, as well as to substantiate the feasibility of reconstructing geothermal power plant facilities (wells and pipelines), thereby enabling their continued productive operation.



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Transforming Cancer Care: India's Precision Medicine Journey.

Genomic technologies are transforming cancer care by enabling discovery of molecular targets, sensitive diagnostics, and effective therapies. Large-scale studies have advanced computational tools to decode complex datasets, deepening insights into cancer biology. Yet, precision oncology in India remains limited due to scarce biorepositories, advanced technologies, and underrepresentation in global trials. Rising cancer mortality in low- and middle-income countries is worsened by delays in diagnostics, leading to poor outcomes. Despite Asia carrying nearly 40% of the global cancer burden, Indian patients are underrepresented, with most diagnostics derived from Caucasian populations. India's genetic diversity, which is 17% of the global population, remains inadequately captured. Initiatives like IndiGen and the 10,000-genome consortium aim to establish reference haplotypes, advancing precision medicine. Tobacco use, responsible for ~27% of India's cancer burden, highlights the need for population-specific strategies. Progress includes dbGENVOC for oral cancer variants and NexCAR19, India's first indigenous CAR-T therapy. National efforts like the Indian Cancer Genome Atlas and the National One Health Mission mark pivotal steps toward inclusive, data-driven cancer care.

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Prof. Suchana Apple Chavanich is a Professor of Marine Science at Chulalongkorn University, Thailand. Her research focuses on coral reef restoration, marine biodiversity, and climate resilience. She leads national and regional initiatives on coral conservation and polar marine research. She is recognized internationally for advancing science-based restoration and community engagement to achieve SDG 14.

Reviving Coral Reefs: Advancing SDG 14 Through Science, Innovation, and Community Action

Coral reefs are among the most biodiverse and economically valuable ecosystems on Earth, yet they are increasingly threatened by climate change, pollution, and overexploitation. Advancing Sustainable Development Goal 14 (Life Below Water) requires integrated scientific innovation, policy engagement, and strong community participation. This presentation highlights science-based coral restoration initiatives in Thailand that combine sexual propagation techniques, microbial enhancement, and thermally resilient coral species to strengthen reef adaptability under rising ocean temperatures. By integrating in situ and ex situ approaches, we aim to enhance genetic diversity and long-term ecosystem resilience. These efforts are complemented by community-based conservation programs that empower local fishers, youth, and coastal stakeholders to actively participate in reef monitoring and restoration. The work demonstrates how women scientists in Asia are contributing to transformative solutions that link biodiversity conservation, climate action, and sustainable blue economy development. Through interdisciplinary research, regional collaboration, and science communication, coral restoration can move beyond small-scale rehabilitation toward scalable and policy-relevant impact. By aligning innovation, capacity building, and inclusive leadership, coral reef restoration serves as a powerful example of how STEM leadership can accelerate progress toward SDG 14 and broader sustainable development goals across Asia.