



The 18th Science Council of Asia Conference

“Role of Science for Society: Strategies towards SDGs in Asia”

PROGRAM OF ACTIVITIES

5th-7th December 2018
Science Council of Japan (SCJ)
Tokyo, Japan

Organized by



The 18th Science Council of Asia Conference

“Role of Science for Society: Strategies towards SDGs in Asia”



5th-7th December 2018
Science Council of Japan (SCJ)
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Messages



As the Minister in charge of Science and Technology Policy of Japan, I would like to extend my greetings to the participants of the 18th Science Council of Asia (SCA) Tokyo Conference hosted by Science Council of Japan (SCJ).

This is the second occasion that the SCA Conference is held in Japan. The first was in 2007 at Okinawa when we had the 7th SCA conference. I would like to express my warm welcome to all the people who have worked together to hold this Conference and the researchers coming from all over Asia including representatives of SCA member academies and scientists of various research institutions and universities.

The theme of this 18th SCA Conference is the “Role of Science for Society: Strategies towards SDGs in Asia.” In June of this year, the Cabinet of Japan decided “Integrated Innovation Strategies”. The Strategies declare that the role of science, technology and innovation (STI) is extremely important to attain SDGs. The Strategies aim to attain 17 targets of SDGs by 2030 utilizing STI of our country, exert continuing efforts and present good examples in attaining SDGs because the frameworks to promote “STI for SDGs” have not yet been established. As a future direction, the Strategies also aim to formulate “STI for SDGs Roadmap” as an implementation plan towards SDGs at the world’s highest level by the middle of 2019. Likewise, to support the formulation of roadmaps by other countries through presenting Japan’s Roadmap to the international society.

Since SDGs is a concept that covers broad issues in economy and society, it is essential that your lines of expertise have to be integrated beyond the barriers of industry, government and academia. I greatly hope that this prestigious conference will bring about extensive discussions on various issues to attain the Sustainable Development Goals, as well as defined roles to be played by science. Similarly, for the meaningful ideas as a result of this conference to be shared across borders and beyond.

Finally, I sincerely hope that your stay in Japan will be truly fruitful and enjoyable.

Mr. Takuya Hirai

Minister of State for Science and Technology Policy

Messages



On behalf of the Science Council of Asia, I feel honored to greet you all in this great historic city of Tokyo, Japan. We are really grateful to Prof. H. Yoshino, Secretary General of Science Council of Asia and Prof. Juichi Yamagiwa, President of Science Council of Japan for their kind and warm invitation. I would like to express hearty thanks to Science Council of Asia (SCA) and Science Council of Japan (SCJ) for organizing this conference timely with important themes.

I have the honor to place before the house that “Transforming our world: the 2030 Agenda for Sustainable Development” was unanimously adopted at the UN General Assembly in 2015. Under a common principle of no one left behind out of 7 billion people living in the world, this Agenda has 17 goals (Sustainable Development Goals, SDGs) and its 169 targets to be achieved within 15 years from 2016.

In response to this, the 18th Science Council of Asia Conference in Tokyo will focus on Asian region specific issues and widely discuss such as what are the issues to be taken into account, how they are being treated and what are the directions to be proceeded, and we will have them in common to deal with in the future as Asia.

Topics of the Conference will include, but are not limited to the following:

Energy, Natural Resources and Built Environment (SDGs 7,11,12); Access to affordable, reliable and sustainable energy; Sustainable management and efficient use of natural resources; Smart cities and zero energy buildings; Aging Society, Health and Medical Care (SDGs 3); Access to quality essential health-care services and affordable essential medicines and vaccines for all; End preventable deaths of newborns and children; Healthy city and housing; Inclusive design and technology for physically handicapped people; Biodiversity and Sustainable Use of Biological Resources (SDGs 14,15); Sustainable use of the oceans, seas and marine resources; Sustainable use of terrestrial and freshwater ecosystems; Fair and equitable sharing of the benefits from the utilization of genetic resources; Cities, History and Cultural Heritage (SDGs 11); Access for all to adequate, safe and affordable housing and basic services and upgrade slums; Protect and safeguard the world’s cultural heritage; Adverse environmental impact of cities; Disaster Risk Reduction (SDGs 9,11,13); Reliable, sustainable and resilient infrastructure;- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters; Gender (SDGs 5); Ensure women’s full and effective participation and equal opportunities for leadership; Reforms to give women equal rights to economic resources; Poverty, Inequalities and Immigrants (SDGs 1,10; Ensure the equal rights to economic resources for the poor and the vulnerable; Build the resilience of the poor and reduce their exposure and vulnerability to climate-related

extreme events and other economic, social and environmental shocks and disasters; Facilitate orderly, safe, regular and responsible migration and mobility of people; Education (SDGs 4); Ensure that all girls and boys complete free, equitable and quality primary and secondary education; Gender disparities in education; Ensure that all learners acquire the knowledge and skills needed to promote sustainable development; Economy (SDGs 8); Economic productivity through diversification, technological upgrading and innovation; Decent work for all women and men; Labour rights and safe and secure working environments for all workers, including migrant workers; Water and Food (SDGs 2,6); Universal and equitable access to safe and affordable drinking water for all; Access to adequate and equitable sanitation and hygiene for all; Sustainable agriculture.

I thank deeply the organizing committee particularly Prof. H. Yoshino, Secretary General, Science Council of Asia (SCA) and Prof. Juichi Yamagiwa, President, Science Council of Japan (SCJ) for offering so much time and effort to make the 18th conference of the Science Council of Asia a great success.

Thank you all again,

Prof. Dr. Quazi Abdul Fattah

President
Science Council of Asia (SCA)

Messages



I would like to welcome you to Science Council of Japan (SCJ), for participating in the 18th Science of Council of Asia (SCA). As President of SCJ, I am deeply honored that this important Conference is held in Japan.

SCJ which was established as a special organization, of the Cabinet Office, to represent the country's scientists both domestically and internationally in 1949 focuses on the academic exchange through the international framework.

Of which, SCJ has been contributing to the academic exchanges with the Asian countries since its inception of ACSC, a predecessor of SCA, a scientists' forum. ACSC was established in 1993 under the leadership of SCJ, and SCJ had contributed as not only its Secretariat but also a host academy of the annual international symposiums in order to promote Asia's academic progress. Since 2000, along with rising importance and influences of Asia in the world, increasing further prominence of constructing infrastructure to enhance academic exchanges and cooperation in the Asian region, made SCJ to advocate an establishment of SCA by evolutionally reorganizing ACSC, which received approval from many scientists in Asia.

Efforts to global issues have increased importance internationally in this century. "Transforming our world: the 2030 Agenda for Sustainable Development" was adopted by the UN General Assembly in 2015 in order to build a sustainable society in the world, and 17 goals (Sustainable Development Goals, SDGs) are demonstrated in the Agenda. Increasing influences of Asia makes a role of science important for society to share the issues and provide useful scientific advice. Therefore, the theme of the 18th SCA Conference, "Role of Science for Society: Strategies towards SDGs in Asia" is timely and appropriate. I am strongly convinced that all the participants who are scientists and researchers from Asia will produce fruitful outputs during the three-day discussions.

This year is the 25th anniversary of the ACSC which is a predecessor of SCA. I am very pleased that the SCA Conference is held in Japan for the first time in 11 years of this commemorative year, and I would like to sincerely appreciate for everyone and SCA personnel who have cooperated in organizing the 18th SCA Conference. SCJ continues to contribute to greater progress of SCA.

Dr. Juichi Yamagiwa

President
Science Council of Japan

Messages



I am pleased that the 18th Science Council of Asia Conference is conducted by Science Council of Japan (SCJ). I would like to express my heartfelt gratitude to Member Organizations, Science Council of Asia (SCA) Secretariat for their cooperation and contribution to organize this Conference, and my deep appreciations goes to all the people who supported it.

The theme of the 18th SCA Conference is “Role of Science: Strategies towards SDGs in Asia”. As you may already know, the purpose of SCA established in 2000 is “to facilitate scientific cooperation in the region toward progress in science and sustainable development of the region”, and SCA has contributed to society through collaboration with academies in Asia. Under such circumstances, Sustainable Development Goals (SDGs) were brought in “Transforming our world: the 2030 Agenda for Sustainable Development” which was adopted at the UN General Assembly in 2015, and efforts to achieve the sustainable development which is key principle of “no one will be left behind” have begun. It is highly significant to discuss a role of science one more time in regard to the contribution to society based on a changing Asian and international situations . However, we had to limit 200 participations due to operational limitation, I hope that this circumstance facilitates outstanding discussions.

The 18th SCA Conference is held for 3 days and about 200 presentations are scheduled. I am delighted that an exceeding number of application is received, and noted a high level of interest on SDGs in Asia. In this Conference, there would be 10 themes in conformity with SDGs, and in addition to the parallel-sessions, Future Earth session, Committee of Science and Society and Young Academy of Japan joint session, Joint Project Workshop, etc. are convened as well. This Conference is an advantageous opportunity to build a network of scholars in and outside the country with scientists’ joint researches, etc. and to contribute to the world from Asia, for which I am sure that there would be abundant outstanding discussions.

In order to achieve the SDGs in Asia, I hope informative outcome would be drawn through enthusiastic discussions on recognizing issues, analyzing solving methods, and directions to proceed with the experts of respective disciplines.

Hiroshi Yoshino

Professor
Secretary General / Treasurer of SCA

Themes



1. Energy, Natural Resources and Built Environment



Access to affordable, reliable and sustainable energy
Sustainable management and efficient use of natural resources
Smart cities and zero energy buildings

2. Aging Society, Health and Medical Care



Access to quality essential health-care services and affordable essential medicines and vaccines for all
End preventable deaths of newborns and children
Healthy city and housing
Inclusive design and technology for physically handicapped people

3. Biodiversity and Sustainable Use of Biological Resources



Sustainable use of the oceans, seas and marine resources
Sustainable use of terrestrial and freshwater ecosystems
Fair and equitable sharing of the benefits from the utilization of genetic resources

4. Cities, History and Cultural Heritage



Access for all to adequate, safe and affordable housing and basic services and upgrade slums
Protect and safeguard the world's cultural heritage
Adverse environmental impact of cities

5. Disaster Risk Reduction



Reliable, sustainable and resilient infrastructure
Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters

6. Gender



Ensure women's full and effective participation and equal opportunities for leadership
Reforms to give women equal rights to economic resources

7. Poverty, Inequalities and Immigrants



Ensure the equal rights to economic resources for the poor and the vulnerable
Build the resilience of the poor and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
Facilitate orderly, safe, regular and responsible migration and mobility of people

8. Education



Ensure that all girls and boys complete free, equitable and quality primary and secondary education
Gender disparities in education
Ensure that all learners acquire the knowledge and skills needed to promote sustainable development

9. Economy



Economic productivity through diversification, technological upgrading and innovation
Decent work for all women and men
Labour rights and safe and secure working environments for all workers, including migrant workers

10. Water and Food



Universal and equitable access to safe and affordable drinking water for all
Access to adequate and equitable sanitation and hygiene for all
Sustainable agriculture

Program at a Glance

Theme: "Role of Science for Society: Strategies towards SDGs in Asia"
Organizers: Science Council of Japan, Science Council of Asia
Date: 5th-7th December 2018
Venue: Science Council of Japan

Day 1

Session	A	B	C	D
Venue	Assembly Hall	Conference Room 5-A (3F)	Conference Room 5-C (3F)	Council Room (2F)
Opening Ceremony				
9:10 9:30	Welcome Remarks President of SCJ Opening Remarks President of SCA (TBD) Congratulatory Address Guest of Honor			
Keynote Speech				
9:30 10:30	Keynote Speech 1			
Break 10:30 -11:00				
11:00 12:30		[Parallel Session B1] Theme2 (1)	[Parallel Session C1] Theme5 (1)	[Parallel Session D1] Theme1
Lunch 12:30 -14:30				
Poster Session 13:00-14:00 (at Conference Room 5-A (3F))				
14:00 15:30		[Parallel Session B2] Theme7	[Parallel Session C2] Theme8	SCA Management Board Meeting (SCA Management Board Members only)
Coffee Break 15:30 -16:00				
16:00 17:30		[Parallel Session B3] Theme4	[Parallel Session C3] Theme1 (1)	SCA Joint Project Workshop
Break 17:30 -18:30				
Reception organized by SCJ (invitation only) 18:30-20:30				
Adjourn 20:30				

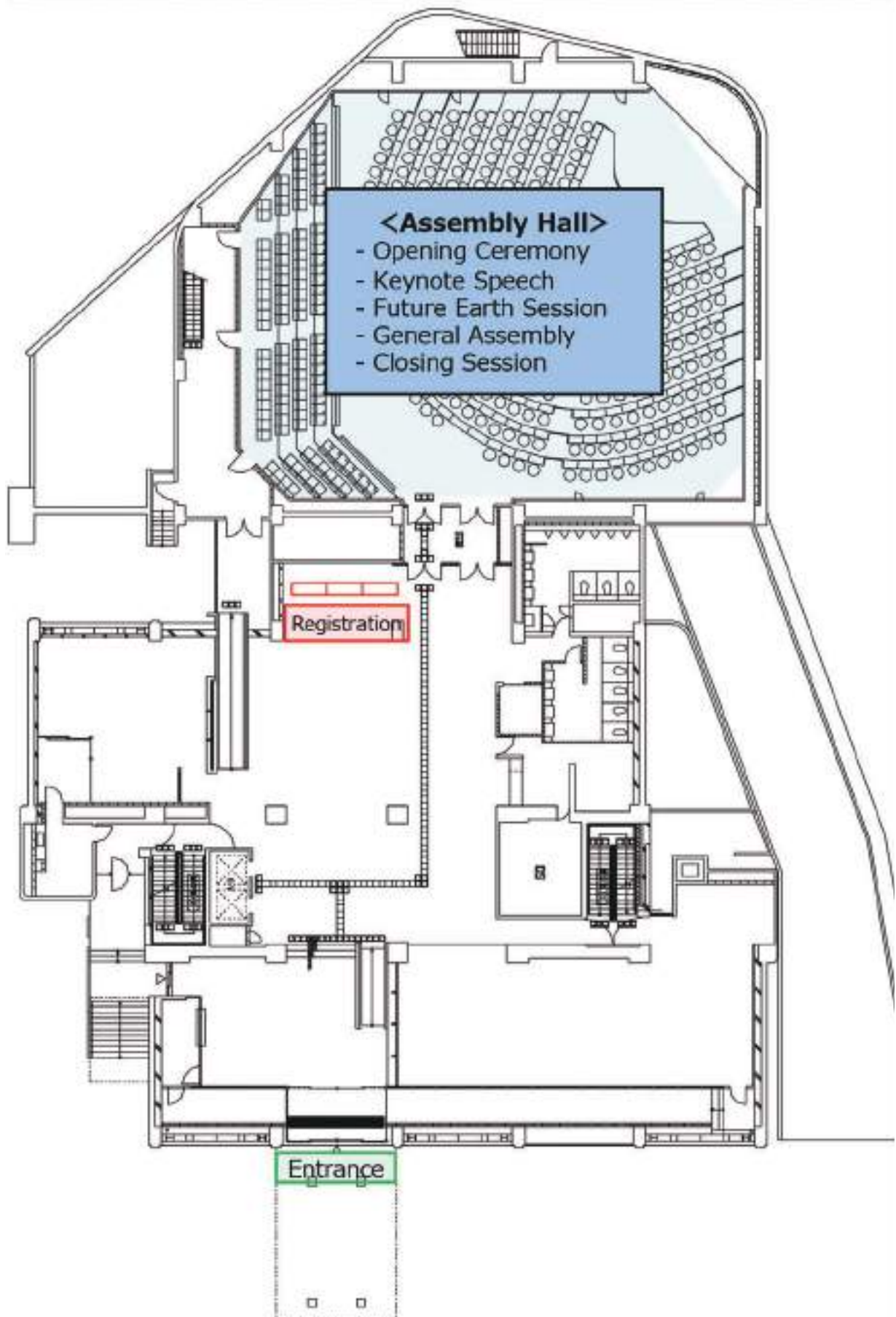
Day 2

Keynote Speech				
9:00 10:30	Keynote Speech 2			
Break 10:30 -11:00				
11:00 12:30		[Parallel Session B4] Theme9	[Parallel Session C4] Theme10	[Parallel Session D2] Theme6
Lunch 12:30 -14:30				
Poster Session 13:00-14:00 (at Conference Room 5-A (3F))				
14:00 15:30	Future Earth Sessions			
Coffee Break 15:30 -16:00				
16:00 17:30		[Parallel Session B5] Theme1 (2)	[Parallel Session C5] Theme5 (2)	Committee of Science and Society and Young Academy of Japan Session
Adjourn 17:30				

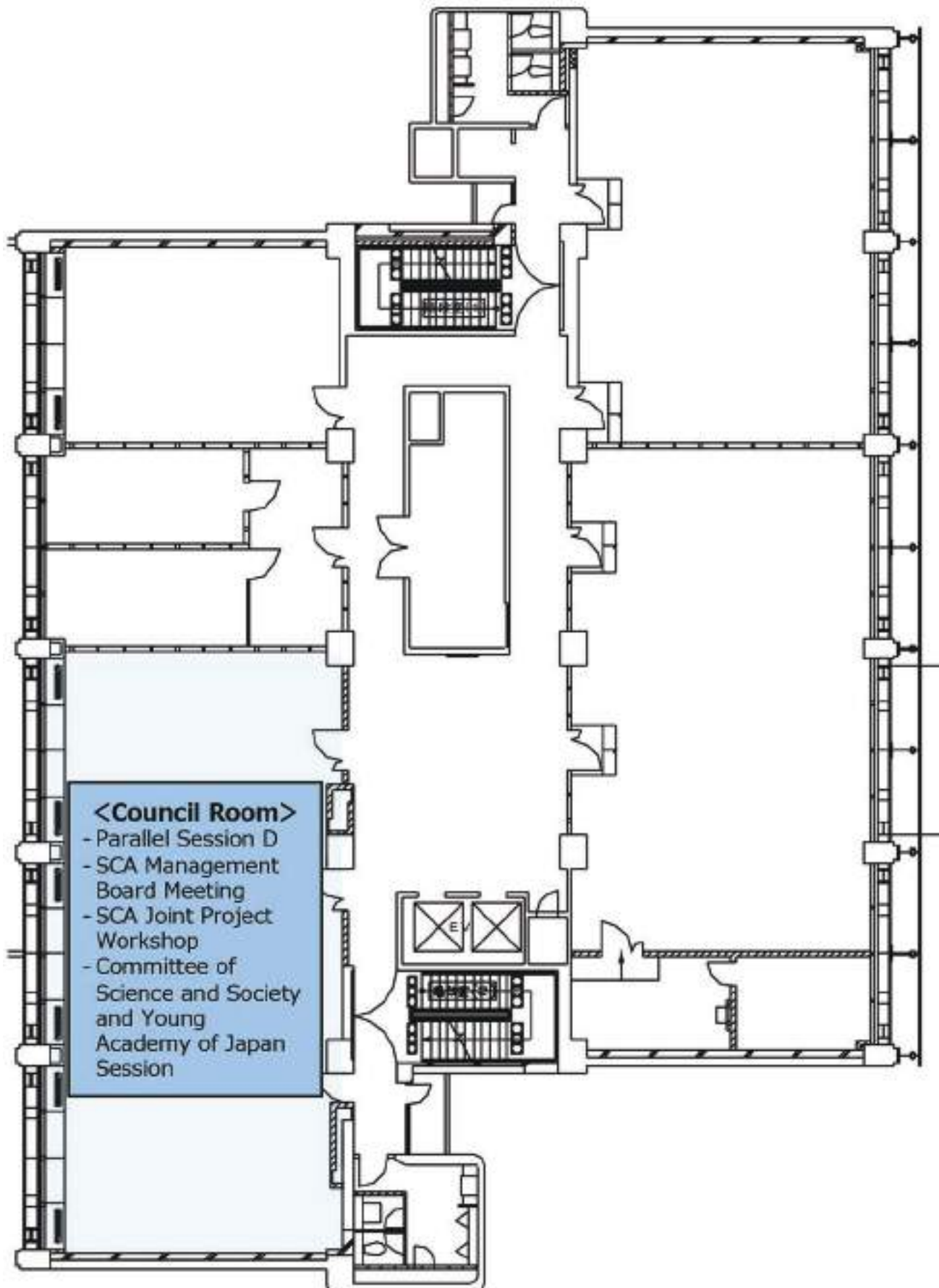
Day 3

9:00 10:30	General Assembly (SCA member organizations only)	[Parallel Session B6] Theme1 (3)	[Parallel Session C6] Theme5 (3)	[Parallel Session D3] Theme2 (2)
Break 10:30 -11:00				
Closing Session				
11:00 12:00	Declaration of SCA Statement President of SCJ Greeting from President-Elect Flag Ceremony			
Lunch 12:00 -13:00 * for study tour participants only				
13:00 18:00	Study Tour (international participants only)			
Adjourn 18:30				

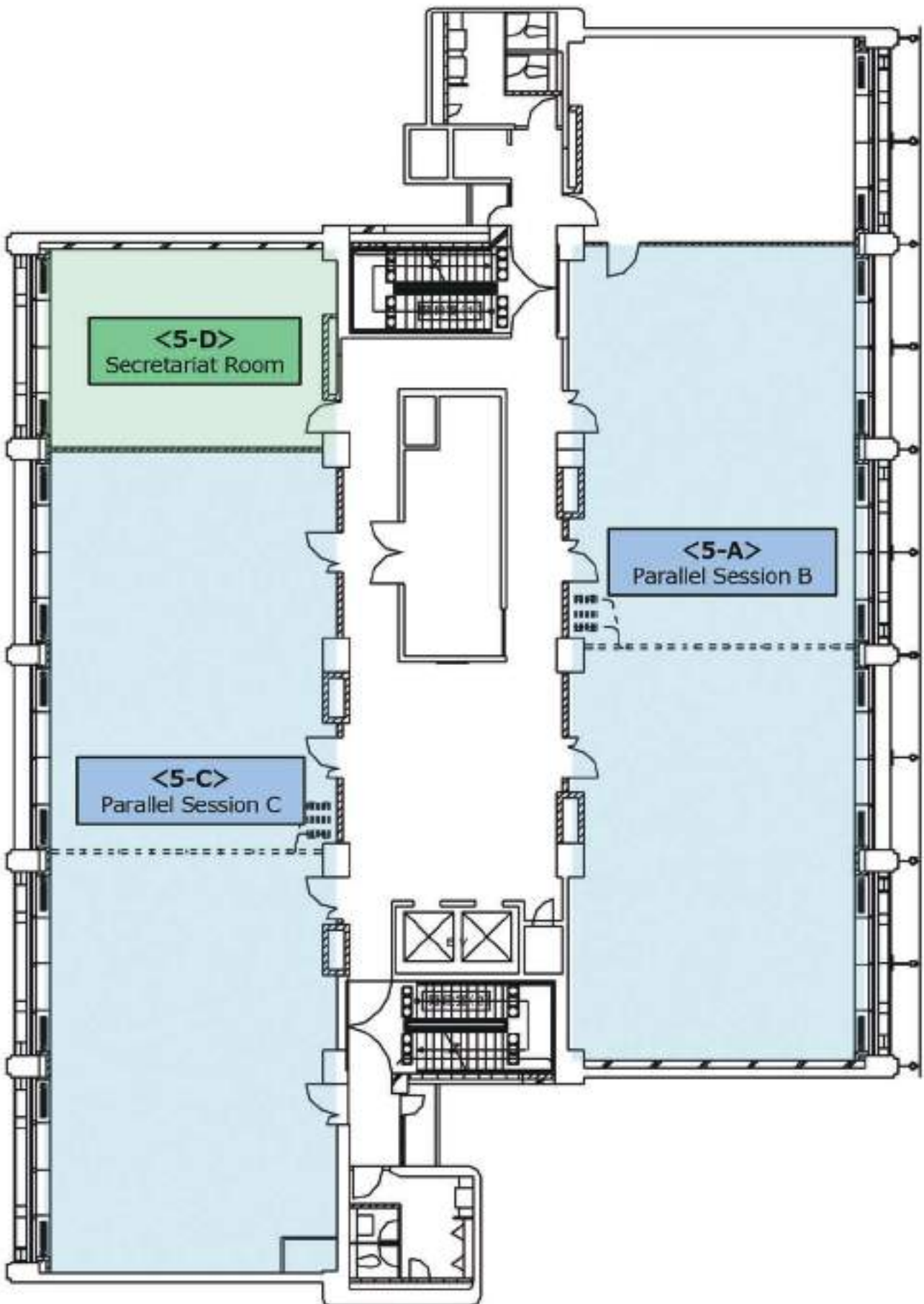
Floor Map [1F]



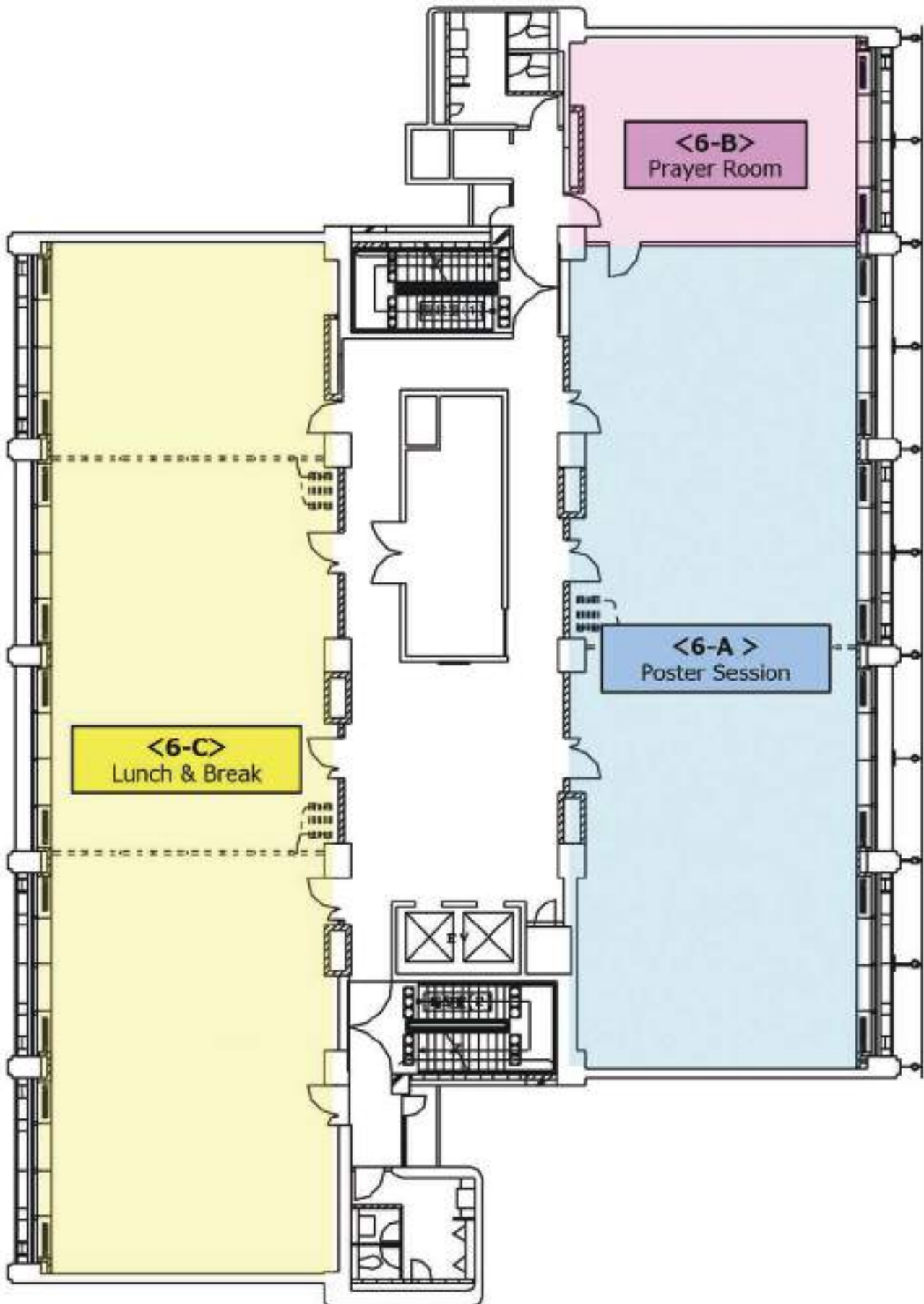
Floor Map [2F]



Floor Map [5F]



Floor Map [6F]



Day 1

Wednesday, 5th December

8:00 - **Registration**

9:10 - 9:30 **Opening Ceremony @ Assembly Hall (1F)**

MC: **Prof. Hiroshi Yoshino**
Secretary General / Treasurer of SCA
Professor Emeritus
Tohoku University, Japan

Welcome Remarks

Dr. Juichi Yamagiwa
President, Science Council of Japan
President, Kyoto University

Opening Remarks

Prof. Dr. Quazi Abdul Fattah
President, Science Council of Asia
President, Bangladesh Academy of Sciences
(Prof. Naiyyum Choudhury, Vice-President of BAS, reads a message for Prof. Fattah)

Congratulatory Address by the Guest of Honor

Mr. Takuya Hirai
Minister of State for Science and Technology Policy

9:30 - 10:30 **Keynote Speech 1 @ Assembly Hall (1F)**

MC: **Prof. Koji Miyazaki**
Professor Emeritus
Tokyo University of Foreign Studies, Japan

Prof. Leena Srivastava
Co-chair of the FE Advisory Committee

Prof. Kazuhiko Takeuchi
Vice President, Science Council of Japan

10:30 - 11:00 **Break**

Parallel Session B1 [Theme 2 (1)] @ Conference Room 5-A (5F)

Co-Chairs: **Prof. Kaoru Arakawa**

Professor

Dean of the School of Interdisciplinary Mathematical Sciences,
Meiji University, Japan

Prof. Christina Aquino Binag

Professor of Chemistry (Vice President of SCA, Former President of
NRCP), University on Santo Tomas, Philippines

**Development of Predictive PBPK Model of Extended-Release
Metformin Tablets**

Frances Lois Ucab Ngo

Project Development Officer, University of the Philippines Manila, Philippines

**In vitro inhibitory activities of selected Philippine plant extracts on
carbohydrate-degrading enzymes linked to type-2 diabetes**

Erna Arollado

Director, Institute of Pharmaceutical Sciences, National Institutes of Health, University of
the Philippines Manila, Philippines

**The Application of Theory of Planned Behavior in Peer's Reproductive
Health Promoters**

Nurlaela Widyarini

Lecturer, Faculty of Psychology, Muhammadiyah University of Jember, Indonesia

**Artificial Nerve Guidance Conduits Based on Polycaprolactone /
Polyaniline / Collagen Type 1 Composite Nanofibers Using Rat
Sciatic Nerve Injury Model**

Christina Aquino Binag

Professor of Chemistry (Vice President of SCA, Former President of NRCP), University on
Santo Tomas, Philippines

2 minutes presentation by poster presenters (8)

Parallel Session C1 [Theme 5 (1)] @ Conference Room 5-C (5F)

Chair: **Prof. Toshio Koike**

Director

International Centre for Water Hazard and Risk Management (ICHARM), Japan

Understanding Disaster Risk: The Role of Science and Technology

Kenji Satake

Professor, the University of Tokyo, Japan

Floods and Sediment Disasters in Western Japan in July 2018

Toshio Koike

Director, International Centre for Water Hazard and Risk Management (ICHARM), Japan

Disaster Risk Governance and Transdisciplinary Approach for Building Societal Resilience to Disasters -Asian Civil Engineering Coordination Council Activity-

Kenichi Tsukahara

Professor, Kyushu University, Japan

2 minutes presentation by poster presenters (7)

Parallel Session D1 [Theme 3] @ Council Room (2F)

Chair: **Hiroshi Matsumoto, PhD.**

Professor

Executive Officer, University of Tsukuba Dean, Faculty of Life and Environmental Sciences Tsukuba, Japan

Japan's Forest Diplomacy and International Governance of Sustainable Development

Takashi Fujiwara

Representative, Japan Sustainable Forest Forum, Japan

Exploring decentralized bioenergy system supported by local bioresources in Japan

Chun Sheng Goh

JSPS-UNU Postdoctoral Fellow, United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS)

Multidisciplinary and Integrated Approaches for Mainstreaming Biodiversity through Strengthening Regional and Global Partnership to Support SDGS

Eddy Sudarmonowati

Deputy Chair for Life Sciences, Indonesian Institute of Sciences, Indonesia

The Molecular Phylogeny of Philippine Ophiorrhiza L. (Ophiorrhizaceae-Rubiaceae): a Proposal on Its Infrageneric Classification and Four New Endemic Species

Niña Kathryn Goles Alfeche

MS Biological Sciences; Science Research Specialist 1, the Graduate School, University of Santo Tomas, Philippines

The use of local Indonesian coconut water for bacterial cellulose-silver modified films and its antibacterial activities for wound dressing applications

Anastasia Wheni Indrianingsih

Researcher, Indonesian Institute of Sciences, Research Unit for Natural Product Technology, Indonesia

2 minutes presentation by poster presenters (2)

12:30 - 14:00 Lunch @ Conference Room 6-C (6F)

13:00 - 14:00 Poster Session @ Conference Room 6-A (6F) (Theme 2, 3, 5)

14:00 - 15:30 Parallel Sessions

Parallel Session B2 [Theme 7] @ Conference Room 5-A (5F)

Chair: **Prof. Koji Miyazaki**

Professor Emeritus

Tokyo University of Foreign Studies, Japan

Policies and Programs for Rural Poverty Alleviation in the Bangladesh Context

Mesbahuddin Ahmed

Fellow and Secretary, Bangladesh Academy of Sciences, Bangladesh

Indirect Policies for Poverty Alleviation through Education Systems in Developing Countries

Yui Nakamura

Associate professor, Faculty of Economics Fukuoka University, Japan

Issues for persons with disabilities in Japan to achieve SDGs : Poverty, Employment, and Education using National Survey

Kai Seino

Section Chief, Research Institute National Rehabilitation Center for Persons with Disabilities, Japan

Transition in Welfare Regime and Migration in East Asia

Wako Asato

Associate Professor, Kyoto University, Japan

Parallel Session C2 [Theme 8] @ Conference Room 5-C (5F)

Chair: **Prof. Nobuko Nagase**

Professor

Ochanomizu University, Japan

Academic Institutions Mobility in the ASEAN Region through Sharing of Best Practices in Sustainable Development

Lilito Dacoco Gavina

Director, Partnership and Special Projects, Don Mariano Marcos Memorial State University (DMMMSU), Philippines

Sustainability in Education Towards Global Citizenship

Sharifah Zarina Syed Zakaria

Associate Professor, Universiti Kebangsaan Malaysia, Malaysia

Exploring Strategies for Sustainable Financing of Early Childhood Care and Education: Evidence from Cambodia, Lao PDR and Viet Nam

Keiichi Ogawa

Professor / Department Chair, Kobe University, Graduate School of International Cooperation Studies, Japan

Promoting Sustainability through Formal and Nonformal Collaborative Education

Jane Singer

Associate Professor, Graduate School of Global Environmental Studies, Kyoto University, Japan

Gender Equality in Islamic Boarding School in Indonesia

Oki Dermawan Djusar

Lecturer, Raden Intan Islamic State University, Indonesia

2 minutes presentation by poster presenters (3)

14:00 - 15:30 SCA Management Board Meeting @ Council Room (2F)

SCA Management Board Members only

15:30 - 16:00 Coffee Break @ Conference Room 6-C (6F)

16:00 - 17:30 Parallel Sessions

Parallel Session B3 [Theme 4] @ Conference Room 5-A (5F)

Chair: **Prof. Matori Yamamoto**

Professor

Faculty of Economics, Hosei University, Japan

Urban Conservation and Historical Heritage for the Revival of Aleppo

Kosuke Matsubara

Associate Professor, Tokyo Institute of Technology, Japan

Safeguarding and Sustainable Development Goals of Intangible Cultural Heritage

Dawnhee Yim

Member, the National Academy of Sciences, Republic of Korea

Localizing SDG Indicators for Japanese Local Governments

Shun Kawakubo

Associate Professor, Hosei University, Japan

2 minutes presentation by poster presenters (2)

Parallel Session C3 [Theme 1 (1)] @ Conference Room 5-C (5F)

Chair: **Shinichi Tanabe**
Professor
Department of Architecture, Waseda University, Japan

Off-Grid Housing Development Towards the Sustainable Society in 2050 in India

Ben Nakamura
Principal, Ben Nakamura and Associates, Inc., Japan

The Role and Opportunities of Solar Home System to Support Green Energy for Tourism in Bunaken Island Indonesia

Meita Rumbayan
Researcher, Sam Ratulangi University, Indonesia

Thermal Comfort and Productivity for Zero Energy Building

Shinichi Tanabe
Professor, Department of Architecture, Waseda University, Japan

Study on Indoor Thermal Environment and Energy use in Different Ecological Region of Nepal

Tika Ram Pokharel
Ph.D. Student, Tokyo City University, Japan

2 minutes presentation by poster presenters (11)

16:00-17:30 SCA Joint Project Workshop @ Council Room (2F)

Establishment of Environmental Conservation Platform of Tonle Sap Lake

Prof. Chihiro Yoshimura
Associate Professor
Tokyo Institute of Technology, School of Environment and Society, Japan

Prof. Om Romny
Director General
Institute of Technology of Cambodia (ITC), Cambodia

Producing Biomass Energy and Material through Revegetation of Deteriorated Grasslands in Indonesia

Prof. Toshiaki Umezawa

Professor

Research Institute for Sustainable Humanosphere, Kyoto University, Japan

Implementation of Disaster Resilient City Through SATREPS Project in Myanmar -Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar-

Prof. Kimiro Meguro

Professor

Institute of Industrial Science, the University of Tokyo, Japan

Future of Ocean Sustainability from Asia and Pacific Perspective

Prof. Mitsuo Uematsu

Emeritus Professor

Atmosphere and Ocean Research Institute, the University of Tokyo

Prof. Lourdes J Cruz

Chair, Philippines NC of FE, National Academy of Science and Technology of Philippines

17:30-18:30 Break

18:30-20:30 Reception organized by SCJ

BRASSERIE PAUL BOCUSE Le Musée
The National Art Center, Tokyo 3F
(Next to the Science Council of Japan)

Day 2

Thursday, 6th December

8:30 - **Registration**

9:00 - 10:30 **Keynote Speech 2 @ Assembly Hall (1F)**

MC: **Prof. Koji Miyazaki**
Professor Emeritus
Tokyo University of Foreign Studies, Japan

Mr. Masaya Futamiya
Chair of Committee on Corporate Behavior & Social Responsibility, Keidanren
Director - Chairman
Sompo Japan Nipponkoa Insurance Inc.

Prof. Om Romny
Director General
Institute of Technology of Cambodia (ITC)

Prof. Teruo Kishi
Science and Technology Advisor to the Minister for Foreign Affairs of Japan

10:30 - 11:00 **Break**

11:00 - 12:30 **Parallel Sessions**

Parallel Session B4 [Theme 9] @ Conference Room 5-A (5F)

Chair: **Prof. Nobuko Nagase**
Professor
Ochanomizu University, Japan

The Sustainable Development Goals (SDGs) and SNA/SEEA as the Basis for Integrated Statistical Systems

Keiji Ujikawa
Professor, Yokohama National University, Japan

Sharing Housework between Husbands and Wives: How to Improve Marital Satisfaction for Working Wives in Japan

Emiko Usui
Associate Professor, Hitotsubashi University, Japan

Effective Strategy To Increase Internet-User Traffic On Intellectual Property Website (Case Study: Indonesian Institute Of Sciences)

Harini Yaniar

Head of IP Valuation Sub division, Center for Innovation, Indonesian Institute of Sciences, Indonesia

A Research on Japanese Entrepreneur in ASEAN and their Innovation: Case study in Thailand

Hideshi Sawaki

Professor Extraordinary, Asia University, Japan

Product Planning Methods for BOP, Introduction to Smokeless Cooking Stove in Rural Myanmar

Motohiro Kurokawa

Professor, Takasaki City University of Economics, Japan

Towards the Improvement of Income Levels of Small Holders of Natural Rubber in Cambodia - The Establishment of Information Transfer System -

Nobuo Hirohata

Professor, Yamaguchi University, Japan

2 minutes presentation by poster presenters (3)

Parallel Session C4 [Theme 10] @ Conference Room 5-C (5F)

Chair: **Dr. Sakae Shibusawa**

Professor

Graduate School of Agriculture, Tokyo University of Agriculture and Technology, Japan

Addressing and Localizing Sustainable Development Goals through Grassroots-Based School-Plus-Home Gardens in the Philippines

Blesída Macasaet Calub

University Researcher, Agricultural Systems Institute (ASI), University of the Philippines Los Baños, Philippines

Identifying the Water Poor Households in Urban India: An Insight from the NSS Data

Ranjeeta Mishra

Postdoctoral fellow, United Nations University, Japan

Sustainable Way of Treating Groundwater Polluted with Arsenic, Iron and Ammonium by a Combination of Biological Filtration and One-Stage Nitritation - Anammox Process

Yoko Fujikawa

Associate Professor, Institute for Integrated Radiation and Nuclear Science, Kyoto University, Japan

Health Risk Assessment of Lead Pollution (Pb) in Green Shells (*Perna viridis*) at Cilincing

Anna Rejeki Simbolon

Researcher, Research Center for Oceanography, Indonesian Institute of Sciences (LIPI), Indonesia

Reusing Treated Municipal Wastewater for Crop Irrigation in South Korea

Seung Woo Park

Member, the National Academy of Sciences, Republic of Korea

Advancement of Asian Cassava Molecular Breeding towards SDGs

Motoaki Seki

Team Leader, RIKEN CSRS, Japan

2 minutes presentation by poster presenters (2)

Parallel Session D2 [Theme 6] @ Council Room (2F)

Co-chairs: **Prof. Matori Yamamoto**

Professor

Faculty of Economics, Hosei University, Japan

Prof. Ni Ni Hlaing

Member of MAAS, Head of English Department, Dean of Faculty of Humanities and Social Sciences of Mandalay University of Distance Education (MUDE), Ministry of Education of Myanmar, Myanmar Academy of Arts and Science (MAAS), Myanmar

Challenges Faced by Higher Education Female Leaders in Myanmar

Ni Ni Hlaing

Member of MAAS, Head of English Department, Dean of Faculty of Humanities and Social Sciences of Mandalay University of Distance Education (MUDE), Ministry of Education of Myanmar, Myanmar Academy of Arts and Science (MAAS), Myanmar

Promoting Gender Equality in the Japanese Academia: How to Improve Academic Environments from the Perspective of SDG5

Kumie INOSE

Professor, Konan University, Japan

Sexual Harassment in Japanese Academic Community

Hiroko Goto

Dean / Professor, Chiba University Law School, Japan

Engendering Value Chains for Inclusive Prosperity: The Case of Tuna Fisheries in the Philippines

Marieta Bañez Sumagaysay

Executive Director, National Research Council of the Philippines, Department of Science of Technology, Philippines

Women's Participation in Environmental Protection and Sustainable Agricultural Development: A Micro-level Study of Two Villages in Bangladesh and Japan

Tofael Ahamed

Associate Professor, Faculty of Life and Environmental Science, University of Tsukuba, Japan

From Cosmetic Multiculturalism to Caring Multiculturalism: Toward Social Inclusion of Migrant Children and Women in Japan

Aya Kitamura

Associate Professor, F Tsuda University, Japan

12:30 - 14:00 Lunch

13:00 - 14:00 Poster Session @ Conference Room 6-A (6F) (Theme 1, 4, 8, 9, 10)

Co-Conveners:

Prof. Tetsuzo Yasunari

Member of FE Advisory Committee, Chair of NC-FE / SCJ, Vice-Chair of Japan NC for FE, DG of RIHN

Prof. Hein Mallee

Director of Asia Regional Centre of FE, Prof. of RIHN

Participants (oral presenters and panel members):

Prof. Leena Srivastava

Keynote speaker of the plenary session of SCA; Co-chair of the FE Advisory Committee

Dr. Mazlan Othman

Director of ISC Regional Office of Asia & Pacific

Prof. Mitsuo Uematsu

Member of Regional Committee for ISC. FE Ocean KAN, Prof. Emeritus of University of Tokyo

Dr. Shin-Chun Candice Lung

Chair, Taiwan NC of FE, Academia Sinica

Prof. Soonchang Yoon

Chair of Korean NC for FE, Vice-President of Korean Academy of Science and Technology

Prof. Chuluun Togtokh

Chair, Mongolian National Committee of FE, Prof. of Mongolian National University

Prof. Lourdes J Cruz

Chair, Philippines NC of FE, National Academy of Science and Technology of Philippines

Prof. Makoto Taniguchi

FE Nexus KAN, Prof. of RIHN

Prof. Kazuhiko Takeuchi

Chair, Japan National Committee of FE, Vice President of Science Council of Japan, President of IGES

Prof. Fumiko Kasuga

Director of the FE Global Hub, Tokyo

Dr. Wang Qinxue

National Institute of Environmental Studies, Tsukuba

15:30 - 16:00 **Coffee Break @ Conference Room 6-C (6F)**

16:00 - 17:30 **Parallel Sessions**

Parallel Session B5 [Theme 1 (2)] @ Conference Room 5-A (5F)

Co-chairs: **Prof. Hiroshi Yoshino**
Professor Emeritus
Tohoku University, Japan

Dr. Suvdantsetseg Balt
Senior Officer
Division of International relation and cooperation, the Mongolian Academy of
Sciences, Mongolia

**Role of Regional Collaboration in Science and Technology Research
for Achieving SDGs: Perspectives from the JASTIP Experience**

Yasuyuki Kono
Professor, Kyoto University, Japan

Adaptable Infill for the Durable and Sustainable Japanese Housing

Kazunobu Minami
Professor, Shibaura Institute of Technology, Japan

**Indoor Air Quality and Health in Residential Buildings in Major Cities
of Indonesia
A case study of Surabaya**

Tetsu Kubota
Associate Professor, Graduate School for International development and Cooperation,
Hiroshima University, Japan

**Study on Thermal Environment of Temporary Shelters Built in Nepal
after Massive Earthquake 2015**

Rita Thapa
PhD, Tokyo City University, Graduate School of Environmental and Information Studies,
Japan

**Solution-Oriented Interdisciplinary Approach for Implementation of
SDG`s in Mongolia**

Suvdantsetseg Balt
Senior Officer, Division of International relation and cooperation, the Mongolian Academy
of Sciences, Mongolia

Study on a Sustainable Method of Pro-Environmental Behavior Habituation

Shinnosuke Adachi

Graduate Student, Waseda University, Department of Architecture, Japan

The Transboundary Water Resource Management in Lower Mekong Basin: A Cooperative Game Approach

Lan Phuong Nguyen

PhD Student, Graduate School of Global Environmental Studies, Kyoto University, Japan

Parallel Session C5 [Theme 5 (2)] @ Conference Room 5-C (5F)

Co-chairs: **Prof. Masako Yoneda**

Professor

Keio Advanced Research Centers, Keio University, Japan

Prof. Mohd Raihan Taha

Director

Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, Malaysia

Stronger Mega Cities for the Next Major Earthquake

Akira Wada

Professor Emeritus, Tokyo Institute of Technology, Japan

Developing an Early Warning System of Dzud (cold-season disaster) in Mongolia

Masato Shinoda

Professor, Graduate School of Environmental Studies, Nagoya University, Japan

Loss and Damage from Flooding in the Pahang Region, Malaysia

Mohd Raihan Taha

Director, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, Malaysia

Building a Connection between Scientists and Local Community after the 2014 Eruption of Ontake Volcano

Koshun Yamaoka

Professor, Graduate School of Environmental Studies, Nagoya University, Japan

Heat Stress Assessment for Outdoor Workers with Low-cost Sensors for Heat Adaptation Policies

Shih-Chun Lung

Research Fellow, Academia Sinica, Taiwan

On-Demand Image Acquisition System by Micro-Satellite Constellation under International Consortium

Yukihiro Takahashi

Professor, Hokkaido University, Japan

16:00 - 17:30 **Committee of Science and Society and Young Academy of Japan Session @ Council Room (2F)**

Session Organizers

Chair: **Dr. Miyoko O. Watanabe**

Vice President, SCJ & Deputy Executive Director, Japan Science and Technology Agency

Panel discussion facilitator:

Prof. Taikan Oki

Professor, the University of Tokyo

Commentators:

Prof. Kaoru Endo

Professor, Gakushuin University

Prof. Kazuyoshi Nishijima

Associate Professor, Disaster Prevention Research Institute, Kyoto University

Presenters

Lectures:

Quest for coexistence between human and wildlife

Dr. Juichi Yamagiwa

President of SCJ & President of Kyoto University

Living with natural disasters

Prof. Dwikorita Karnawati

Former President, Gadjah Mada University, Indonesia

Beyond SDGs - Education & The 4th Industrial Revolution

Prof. Sharifah Zarina Syed Zakaria

Institute for Environment and Development (LESTARI), Malaysia

Visual Communication Design for Language Revitalization

Ms. Fumi Yamamoto

Designer/illustrator, PhD student of Kyoto City University of Arts

Commentators:

Prof. Dawnhee Yim (Korea)

Member of the National Academy of Sciences, Republic of Korea

Ms. Mriduchhanda Chattopadhyay (India)

PhD student in Economics of Waseda University

Dr. Michiharu Nakamura

Senior Advisor of JST, A member of UN 10-member group

Prof. Kaoru Endo

Prof. Kazuyoshi Nishijima

Day 3

Friday, 7th December

8:30 - Registration

9:00 - 10:30 General Assembly @ Assembly Hall (1F)

SCA member organizations only

9:00 - 10:30 Parallel Sessions

Parallel Session B6 [Theme 1 (3)] @ Conference Room 5-A (5F)

Chair: **Prof. Hiroyuki Yamamoto**
Professor
Nagoya University, Japan

Geophysical Methods in Determining Energy Reserves of Geothermal for Sustainable Development

Anastasia Neni Candra Purnamasari
Lecturer, Universitas Proklamasi 45 Yogyakarta, Indonesia

Growth Stresses and Related Problems in Tropical Fast-Growing Species

Hiroyuki Yamamoto
Professor, Nagoya University, Japan

Resources-Energy-Development Nexus and its Implications for Achieving the SDGs in Asia

Benjamin Craig McLellan
Associate Professor, Kyoto University, Graduate School of Energy Science, Japan

Thermal Characterization of Portable Micro-Gasifier Using Biomass Waste as Fuel and Its Economic

Wira Widyawidura
Director, Center for Energy and Environmental Studies, Universitas Proklamasi 45, Indonesia

Fabrication and Characterization of Polypyrrole, Carbon Black and Carbon Nanotubes for Abaca and Banana-Cotton Textile-Based Supercapacitor Electrodes

Angelico Nichole Meneses Tolentino

MS Chemistry Student, University of Santo Tomas, Philippines

The Framing Effect of Energy Labels: A Study of Energy Label Designs' effect on Correct Evaluation of the Energy Saving performance of Buildings

Mieko Fujisawa

Professor, Kanazawa university, Japan

Parallel Session C6 [Theme 5 (3)] @ Conference Room 5-C (5F)

Co-chairs: **Prof. Akira Wada**

Professor Emeritus

Tokyo Institute of Technology, Japan

Dr. Rilya Rumbayan

Lecturer and Researcher

Manado State Polytechnic, Indonesia

Linking post-disaster survey and disaster risk reduction - Activities of Japan Association for Wind Engineering -

Kazuyoshi Nishijima

Associate Professor, Disaster Prevention Research Institute, Kyoto University, Japan

Road Geohazard Risk Management using Adaptive Approach for meeting Country's Capacity

Kazushige Endo

Senior Staff, Minister's Secretariat, Ministry of Land, Infrastructure, Transport and Tourism, Japan

Diagnostic of Concrete Performance for Earthquake Resistance Buildings and Infrastructure Using Infrared Thermography

Rilya Rumbayan

Lecturer and Researcher, Manado State Polytechnic, Indonesia

Secondary Analysis of the Questionnaire Survey on Scientific Research related to the Great East Japan Earthquake Disaster by Science Council of Japan - Multivariate Analysis on Data Sharing and Fund Shortage -

Keiichi Sato

Associate Professor, Senshu University, Japan

Parallel Session D3 [Theme 2] @ Council Room (2F)

Chair: **Prof. Kaoru Arakawa**

Professor

Dean of the School of Interdisciplinary Mathematical Sciences, Meiji University, Japan

Big Data Analysis of the Urban Heat Island Effect on Human Health Problems in Urban Central Tokyo

Kayoko Yamamoto

Associate Professor, University of Electro-Communications, Japan

Vaccine Development for Jembrana Disease Control in Bali Cattle: First Field Trial

Endang Tri Margawati

Researcher, Research Centre for Biotechnology - LIPI, Indonesia

Field Survey on Impact of Living Environments on Brain, Cardiovascular, Respiratory and Locomotive system and Co-Benefit Evaluation of Disease and Long-Term Care Prevention

Toshiharu Ikaga

Professor, Keio University, Japan

Healthy Cities in Asia: urban planning and governance addressing sustainable development goals (SDGs)

Keiko Nakamura

Professor, Tokyo Medical and Dental University, Japan

10:30 - 11:00 Break

11:00 - 12:00 **Closing Session @ Assembly Hall (1F)**

MC: **Prof. Koji Miyazaki**
Professor Emeritus
Tokyo University of Foreign Studies, Japan

Declaration of SCA statement

Prof. Hiroshi Yoshino
Secretary General / Treasurer of SCA

Greeting from President-Elect

Prof. Dr. Xi Wang
Vice President, China Association for Science and Technology
Director General, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences

Flag Ceremony

Handing over the SCA Flag to the Host of the next Conference

Closing Remarks

Prof. Kazuhiko Takeuchi
Vice President, Science Council of Japan

12:00 **Adjourn**

Partitipants other than those who do not participate in the study tour

12:00 - 13:00 **Lunch**

Study tour participants only

13:00 - 18:00 **Study Tour**

International participants only and advanced reservation is required. (Reservation is not possible on the day.)

Poster Session 1

13:00-14:00, Wednesday, 5th December

Conference Room 6-A (6F)

[Theme 2]

ID No.	Presenter	Title
2-13-P	Gerwin Louis Tapan Dela Torre Institute of Pharmaceutical Sciences, National Institutes of Health, University of the Philippines Manila	Premna odorata and Psidium guajava ethanol extracts as preservatives in suspension
2-14-P	Kimiko Nakayama Kobe University	Relationship between weak consciousness concerning Community Organization Activities and personal factors of Japanese Public Health Nurses
2-15-P	Hisaya Tanioka Tanioka Clinic	In vivo Trabecular Architecture of the Vertebrae: Analysis of Aging, Gender, and Smoking
2-16-P	Angelina Alampay Atienza College of Dentistry, University of the Philippines Manila	Antimicrobial action of Calcium Hydroxide, Chlorhexidine, Caesalpinia pulcherrima and their Combination on Enterococcus faecalis and Candida albicans
2-17-P	Nodoka Yamauchi France Bed Co.,Ltd.	Design Principles of products for active seniors
2-18-P	Sam Dominic Aquino Binag Research Center for the Natural and Applied Sciences, University of Santo Tomas	Are Herbal Medicines SAFE? The Truth Revealed for Blumea balsamifera (L.) DC. (Sambong) and Ehretia microphylla Lam. (Tsaang-gubat) Derived Medicinal Products
2-19-P	Hiromi Kohori Segawa Kyoto University graduate school of public health	Exploring prevention measures of Non-Communicable Diseases according to Gross National Happiness in Bhutan: 1st-Phase Comprehensive Qualitative Study
2-20-P	Nobuo Nishi National Institute of Health and Nutrition, National Institutes of Biomedical Innovation, Health and Nutrition	Scenarios for sustainable medical and long-term care expenditures for the elderly in Japan

[Theme 3]

ID No.	Presenter	Title
3-06-P	Masanori Mori Nagoya University Graduate School of Bioagricultural Sciences and School of Agricultural Sciences Research center for Future Earth	The influence of the forest fires occurred in agricultural concessions on local
3-07-P	Rina Hidayati Pratiwi Universitas Indraprasta PGRINutrition	Molecular Identification of Endophytic Bacteria from <i>Neesia altissima</i> Bl. (Malvaceae) Antagonistic to Diarrhea-Causing Bacteria

[Theme 5]

ID No.	Presenter	Title
5-16-P	Ze Liu Toyo University	Prediction of heatstroke occurrence & simulation of heat acclimation in labor working environment on Asian region
5-17-P	Satoru Nishikawa Nagoya University Disaster Mitigation Research Center	Ichi-Nichi-Mae Project' for Disaster Awareness & the Possibility of Technical Transfer to other Disaster-Prone Countries ; 'If We were Back the Day before the Disaster, How can We better Prepare?'
5-18-P	Campina Illa Prihantini Bakti Bangsa Institute of Economic Science Pamekasan	Estimating The Preventive Expenditure Based On Flood In Dalpinang Village, Sampang Regency As Effort Reducing The Effect Of Flood
5-19-P	Haruo Hayashi National Research Institute for Earth Science and Disaster Resilience	Exploring the possibility of online synthesis system for disaster risk duction as a tool for promote "consilience" of knowledge and practice
5-20-P	Keiko Tamura Niigata University	Constructing the Concept of 'Build Back Better' for the Development of Sustainable Society
5-21-P	Yusuke Amano Ministry of Land, Infrastructure, Transport and Tourism, Japan	The way for Science and Technology community to promote investment in Disaster Risk Reduction
5-22-P	Kaoru Takara Kyoto University	Integration of Knowledge to Estimate Probable Maximum Flood Events

Poster Session 2

13:00-14:00, Thursday, 6th December

Conference Room 6-A (6F)

[Theme 1]

ID No.	Presenter	Title
1-18-P	Syamsul Maarif Proklamasi 45 University	Analysis of the effect of temperature and mixture of raw materials on pyrolysis process with single retort-rocket stove technology to charcoal briquette characteristics
1-19-P	Muchamad Malik Proklamasi 45 University	An experimental study on the performance of Savonius wind turbines related to blade variation
1-20-P	Erina Kojima Nagoya University, Graduate school of Bioagricultural Science school of Agricultural Science Nagoya University, Future Earth Research Center	Wood engineering aiming to integrate forest management and timber utilization (1) Supply and demand balance of forest resources based on carbon balance
1-21-P	Kazuhiro Fukuyo Yamaguchi University	Correlation and Causality between Economic Growth and Energy Consumption in the Asian Landlocked Countries
1-22-P	Weijun Gao Qingdao University of Technology, China and The University of Kitakyushu, Japan	Situation of Energy Use and Environment in Rural residential Buildings with Tourism Business of Zhejiang, China
1-23-P	Muhammad Noviansyah Aridito Department of Environmental Engineering, Proklamasi 45 University Yogyakarta (UP45)	Characterization of Product from Pyrolysis Sawdust Briquette based on Variation of Heating Rate and Gas Suction Rate Using Rocket Pyrolyzer and Plastic Oil Burner
1-24-P	Celine Grace Vicencio Causapin The Graduate School, University of Santo Tomas	Multi-walled Carbon Nanotubes and Nickel Hydroxide on Banana-Polyester Woven Fabric as Supercapacitor Electrode Material: Preparation and Characterization
1-25-P	Mriduchhanda Chattopadhyay Graduate School of Economics, Waseda University	Willingness to pay for lowering the risk from dirty cooking energy: A case study of rural Indian households
1-26-P	Shinichi Taniguchi Waseda University	Effects of power-exchange openness to renewable energy on its penetration and social welfare
1-27-P	Yasuko Yoshino Nihon Univ.	Environmental Living Conditions and the Concept for a Bio-village in Sunan Yugur Autonomous County in China
1-28-P	Mishan Shrestha Tokyo City University, Yokohama	Study on thermal comfort in naturally ventilated higher secondary school buildings in Nepal

[Theme 4]

ID No.	Presenter	Title
4-06-P	Haruka Ono Toyohashi University of Technology	The Impact of Land Tenure Systems on Informal Urban Development in African Cities: A Comparative Study of Lusaka, Dakar and Nairobi
4-07-P	Xianqun Guo Kozo Keikaku Engineering Inc.	Reconstruction of Kumamoto Castle in 1960, Damages at 2016 Earthquakes and Restoration for Future

[Theme 8]

ID No.	Presenter	Title
8-07-P	Satoshi Araki University of Oxford	Are Skills the Key to Economic Success? Re-examining the Relative Impacts of Skills and Credentials on Occupations and Earnings
8-09-P	Mizue Y. Kissho Tokyo University of Science Research Center Math and Science Education, SSM	Science Education towards SDGs Society ~Marie S Curie as an Innovative Science Educator~
8-10-P	Akinori Yamabe Jichi Medical University	Learning SDGs for University Students in Japan

[Theme 9]

ID No.	Presenter	Title
9-07-P	Hoang Ngan Giang National Graduate Institute for Policy Studies	Micro Level Behavior toward Technological Upgrading for Domestic Market
9-08-P	Kunihiro Maeda Utilization of Digital Information Research Department, JIPDEC	The Normative "Platform as a Service" for SDGs Ecological Economy - Beyond the antagonism of "the ethics of market" and "the ethics of governance"
9-09-P	Somnath Sharma The University of Tokyo	An Analysis of Household Participation in the Formal and Informal Credit Sectors in India

[Theme 10]

ID No.	Presenter	Title
10-07-P	Satoko Mori Meisei University	Dilemmas and Challenges of Civil Society over SDGs 6: The Case of the Water Justice Movement in Asia
10-08-P	Hezri A. Adnan Center for Southeast Asian Studies (CSEAS), Kyoto University	The Sustainability Transition of Rice Cultivation in Northeast Thailand

The Application of Planned Behavior Theory in Peer Reproductive Health Promoters

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Abstract

Many studies on the role of peer promoters of reproductive health issue have been conducted, little have focused on predicting determinants of intention toward the behavior to promote the issue. This research aims to investigate the role of determinants of intention toward adolescents' behavior in promoting reproductive health issues. We hypothesized that the determinants of intention can explain the behavior. It consists of two studies, involving peer educators and counselors of reproductive health promotion. Study 1 aims to identify the set of salient beliefs that peer promoters hold about the behavior to promote reproductive health. Study 2 aims to determine which determinants of intention promote reproductive health: attitude toward performing the behavior, perceived norms concerning performance of the behavior, perceived behavioral control in respect to performing the behavior. Study 3 aims to find model of actual behavior in reproductive health promotion, conducted 1 month after the intervention. Our findings show that attitudes and subjective norm determines the behavior of reproductive health promotion $F(3,87)=28.103$; $p<0.05$] and explain 49.2% of variance of the intention.

Keywords: intention, reproductive health, peer promoter, planned behaviour

1. Introduction

Peer involvement is a key element in ensuring reproductive health of adolescent. This can only be achieved through the involvement of adolescents in the program that we conduct. Several advantages of involving adolescents is that it promotes them to be more open in communicating reproductive health issues^[1], increase capability in identifying life problems^{[2][3]}, and increase their sense of responsibility towards their health^[4]. Nevertheless, there are few disadvantages identified in the involvement of young peer agents, such as inadequate knowledge on the issue, particularly those with no appropriate training^[3] and the fear of getting negative judgment from the environment becomes a psychological barrier among peer educators or counselors in playing their role.

Several programs have been initiated to solve these barriers in delivering reproductive health promotion, such as improving adolescents' knowledge on reproductive health through short courses, workshops, or trainings. In Indonesia, the institution responsible for dealing with reproductive health is *Badan Kependudukan dan Keluarga Berencana Nasional* (BKKBN), which is translated as the National Population and Family Planning Board. Consequently, the framework of reproductive health programs for peer agents must be planned by the institution.

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This research aims to identify several determinant factors that influence adolescents' motivation to promote reproductive health issues to their friends. By considering the holistic scope of reproductive health issue, the campaign needs to be identified using a comprehensive theory, namely TPB^{[5][6]} which contains attempts of improving the agents' knowledge, attitude, motivation, behavior intention, personal skill, self-efficacy related to adolescent reproductive health^{[7]-[13]}. In general, studies emphasize their evaluations more on the results to find out the effects of a program on knowledge, attitude and behavior^{[14]-[16]}. On the other hand, studies coming with evaluations that give the emphasis to programs' compatibility with the target need are still rare. An evaluation that puts its basis on the aspect of process encompasses program development, program implementation, and target group acceptance^[17]. One of the theories used as the basis for developing intervention and predicting a behavioral change is theory of planned behavior (TPB). According to this theory, individuals' intention to behave in accordance with a reasonable, consistent and even automatic flow is based on his/her behavioral beliefs. A belief is a cognitive base of attitude, subjective norm, perceived behavior control, intention, and behavior. This theory can identify and explain the complex relationship between attitude, subjective norm, perceived behavioral control, intention and behavior itself. The relationship between the three determinants and intention of behavior is shown in the Figure 1^{[5], [18], [19]}. This study based on a series of 2 studies. The study 1 aimed to expose the subjects' beliefs relating to their attitudes, subjective norms and perceived behavioral control in promoting adolescent reproductive health. Based on TPB, the important phase that must be passed is the elucidation of beliefs related to attitude, subjective norm, and perceived behavioral control. This phase is also called formative study^{[6], [20]}, a research that aims to explore themes considered most important as to the beliefs in results to be achieved from certain behavior (behavioral belief), important persons who determine attitude (normative belief), and situation that can determine behavior (control belief). The study 2 aimed to find out the role of factors determining the subjects' intentions to promote the issue of adolescent reproductive health.

2. Methods

Study 1

Participants. As many as 44 subjects participated in this study, consisting of 6 male and 38 female students with their average age of 20 years old; (SD=1.79). Most of them are members and participants of *Pusat Informasi dan Konseling Mahasiswa (PIK-M)*, also known as the Center for Students Information and Counseling. PIK-M is an organization under the National Population and Family Planning Board in collaboration with local government. This is assigned to disseminate information about: 1) the risks faced by adolescents in respect of three issues i.e. sexuality, drug abuse and HIV/AIDS; and 2) Marriage age maturation, life skills, counseling service, life goal and network building.

Procedure of the Study. Worksheets were given to the participants to explore their beliefs before we conducted a focused group discussion. They were asked to answer several open-ended questions to analyze their behavioral, normative, and control beliefs, such as: 1) '*Mention 5 advantages and 5 disadvantages that you will get if you promote the issue of reproductive health to other people within the next 1 month*' (behavioral belief), 2) '*Mention any person or group who will ask you to communicate the issue of reproductive health with other people*', '*Mention any person or group who will not support you in communicating the issue of reproductive health with other people*' (normative belief), 3) '*Mention any factor or condition that eases and hampers you to communicate the issue of reproductive health with your friends.*' (control belief).

Results. Content analysis was done to determine the salient beliefs that shapes attitude towards the behavior, subjective norms and perceived behavioral control of peer promoters. Several themes in the behavioral beliefs: a) increasing one's own knowledge about the issue of reproductive health, b) increasing other people's knowledge about the issue, c) fulfilling inner satisfaction, d) increasing skill of

communicating the issue, e) developing a sense of pride from being a promoter ($M=4.32$; $SD=3.79$) up to ($M=7.43$; $SD=2.00$). 2) Normative beliefs are the subjects' evaluations on the person or group who wants them to promote adolescent reproductive health. They are distinguished into two: referent and legitimate power. Referent power are those with whom the participants had horizontal (equal) relation. Meanwhile, legitimate power are those with whom the subjects has vertical relation (at the position higher than the subjects). According to the results, there are two sources of legitimate power, namely co-workers of PIK-M ($M=6.20$; $SD=2.50$) and supervisors ($M=5.93$; $SD=2.89$). They were evaluated to have been the most decisive in their attempt of promoting the issue of adolescent reproductive health. 3) Perceived behavioral control is the subject's belief in the factors that enable them to promote the issue of adolescent reproductive health. The availability of fund and psychological support from the management of BKKBN and University are the strongest control ($M=29.82$; $SD=11.82$).

Study 2

Location of the Study. The study was done at the *Office of Women Empowerment, Child Protection and Family Planning* of Jember Regency and at the Faculty of Psychology, Universitas Muhammadiyah Jember.

Participants. A total of 91 educators, counselors and peer educators who participated in the training were assigned as peer promoters. The average age of the participants is 21.38 years ($SD=3.92$, range 14-44 years) and most of them were females (61.5%).

Measurement. Participants were asked to complete four scales, namely the attitude, subjective norm, perceived behavioral control, and intention scales that have been constructed based on study 1. The scales consists of 10 items with a loading factor of ($0.73 < \lambda < -0.77$) for the attitude scale, 10 items of subjective norm scale ($\lambda = 0.83$), 14 items of perceived behavioral control scale ($0.77 < \lambda < -.80$) and 4 items of Intention scale ($\lambda = 0.86$).

Results

- 1) Based on sex, we found no difference in the variance of subjective norm [$t(89)=-0.31$; $p>.05$], perceived behavioral control [$t(89)=-1.365$; $p>.05$], and intention [$t(89)=-.04$; $p>.05$] of behaviors in promoting the issue of reproductive health. Both male and female participants have the same evaluation on parties who drove them to decide to promote the issue of reproductive health. Regarding the aspect of control, both male and female participants also have the same evaluation on factors that allows them to conduct reproductive health promotion activities, such as availability of facilities/infrastructures, social support and psychological condition. It was interesting to find that there was a difference in the level of variance in their attitude toward the result, obtained when promoting the issue of adolescent reproductive health [$t(89)=-2.88$; $p<.05$]. The result was the increase of skill and confidence in conducting the promotion. Female has a more positive attitude ($M=59.98$; $SD=7.78$) compared to males ($M=54.83$; $SD=9.47$).
- 2) A simple regression analysis was done to explore which variables (e.g., attitude, subjective norm and perceived behavioral control) can best explain the intention of doing a promotion to their peers. We found that attitude, subjective norm and perceived behavioral control simultaneously could explain the intention [$F(3.87)=28.10$; $p<.05$] and explain 49.2% of variance of the intention. The subjective norm played better role ($\beta=0.18$; $p<.05$) than the attitude ($\beta=.09$; $p>0.05$) and perceived behavioral control ($\beta=.06$; $p>.05$).

3. Results and Discussion

The result of regression analysis in Study 2 shows that attitude, subjective norm and perceived behavioral control could explain the intention to promote reproductive health [$F(3.87)=28.10$; $p<0.05$] and explain 49.2% variance of the intention. The subjective norm performed a better role ($\beta=0.18$; $p<.05$) than attitude ($\beta=.09$; $p>.05$) and perceived behavioral control ($\beta=.06$; $p>.05$). The results of this research support TPB

(Fishbein, 2008; Fishbein & Ajzen, 2010), which states that our belief in the consequences of exerting such effort, perceived social pressure (i.e., supervisor, co-workers), and supporting personal or environmental factor are determinant factors of the behavior. In general, the results of this research has confirmed the TPB, that subjective norm plays a strong role in the tendency of behaving as compared with perceived behavioral control although there is different tendency that the contribution of attitude is less able to explain the tendency of behaving.

A stronger determinant of the intention to promote reproductive health is subjective norm ($\beta=.18$; $p<.05$). Co-workers and supervisors played important roles in giving consent to promote reproductive health. Those considered to have the power to decide are those who have either a vertical or horizontal relationship with the adolescents. The vertical relationship indicate that those people have the authority to approve of the students' act in promoting reproductive health issues to their peers. Those having vertical relationship with them are, among others, teachers or consultative lecturers and leading persons of the related institutions such as the *National Population and Family Planning Board* (BKKBN) and *Women Empowerment, Child Protection and Family Planning Office* (DP3AKB) of the local governments. It was also strengthened by the result of our observation that the supervisor from institutions carried out assistance by regularly giving a variety of trainings. Planning and authorization of programs were done by their respective teachers or lecturers. Those having horizontal or equal relationship were friends or co-workers in reproductive health organizations at schools or universities. In line with the previous studies, one of the sources of knowledge and reference for communicating any problems of sexuality and reproductive health needs could be from people with authority^[21]. It can be understood that they will direct peer promoters in choosing and confirming their beliefs based on referent or of authority to determine their willingness to act^[22].

The attitude of promoters toward promote reproductive health to their peers refers to the possible consequences of the action, which are the increase of knowledge, skill and confidence. Interestingly, we found that there was variance in the attitude toward the result ($t(89)=-2.88$; $p<.05$). Female participants has a more positive attitude ($M=59.982$; $SD=7.78$) compared to males ($M=54.829$; $SD=9.47$). Contrarily with previous study, male adolescents are more open to discuss their problems of sexuality and reproductive health with their peer friends than females. Openness in communicating problems of sexuality and reproductive health is a normal thing for male adolescents. However, we found that the ability to speak about these problems is a positive achievement for female adolescents^[21].

Intention is determined by the belief in the ability to perform the behavior and to overcome any obstacle from situation. The result of this study showed that the availability of programs, assignment, attention from fellow members of organizations, permission from schools, academic tasks and shyness were the factors related to situations that determined the predisposition of promoting the issue of reproductive health. Regression analysis shows that the belief in perceived behavioral control had less impact on the tendency to act ($\beta=.06$; $p>.05$). It can be understood that perceived behavioral control is very closely related to the context in which the ability to control behavior is determined by the existing role and relation within a group or community. Peer promoters as parts of reproductive health communities at schools or universities have different roles from their roles as students. Borrowing Triandis perspective about subjective culture and interpersonal relationship^{[23][24]}, there are different cultures among societies that hold different norms and values with reference to determine how individual makes a decision. In this study, the role of reproductive health promoters has norms and values that are different from the role of students in an academic setting. Special situation reported by the subjects was related to their position as students in which decision making should follow the prevailing academic rules. In more specific way, it can be explained that when they face consent and academic tasks, decision making must be compliant with the prevailing academic provision. Such had been the weakness of this study too, that personal and situational factors revealed two different situations. On the other hand, this study also confirmed that the contribution of the earlier study to finding the strongest beliefs was a process that should be done to gain a clear description of the important factors affecting an individual to act. It became the foundation for the study

that made use of *theory of reasoned behavior* for explaining and predicting certain behavior^{[6], [20], [25]}

Table 1. Regression Analysis in Predicting Intention to Promote Reproductive Health

	R	R ²	Adjusted R ²	F	Unstandardized beta	Standardized beta	SE	t-value
Regression	.702	.49	.48	28.10**				
Attitude					.09	.19	.05	1.86
Subjective Norm					.18	.42	.06	3.08**
Perceived Behavioral Control					.06	.17	.05	1.28

4. Conclusions

This series of studies show that female participants has a more positive attitude compared to males. The status of organization stewardship that consists of administrators, member, and supporters of counseling and reproductive health organization did not determine the attitude, subjective norm, perceived behavioral control, intention and behavior to promote the issue. Similarly, the subjects' last formal education background (e.g., junior high school, senior high school, and university) did not determine the previous variables.

Regression analysis results show that the attitude, subjective norm and perceived behavioral control could simultaneously explain the tendency to promote reproductive health. The subjective norm played better and more consistent role than the other variables in explaining the behavior of promoting the issue of reproductive health. It shows that the parties related to adolescent reproductive health organizations, such as BP2KB/DP3AKAB of the regency, BKKBN, supervisors of reproductive health organizations, educators and organization administrators, are factors that play a significant role in determining the willingness of adolescents to promote the issue of reproductive health to their peers as compared with other factors.

Based on this research, the factor playing the best role in determining the willingness of peer reproductive health promoters is their subjective norm. Thus, it is necessary to involve every influential party in the issue of reproductive health in the implementation of programs from planning, execution and evaluation of activities.

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