



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)**  
**Tokyo, Japan**

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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 (5F)	Conference Room 5-C (5F)	Council Room (2F)
<b>Opening Ceremony</b>				
9:10	Welcome Remarks President of SCJ Opening Remarks President of SCA (TBD) Congratulatory Address Guest of Honor			
9:30				
<b>Keynote Speech</b>				
9:30	Keynote Speech 1			
10:30				
<b>Break 10:30 -11:00</b>				
11:00		[Parallel Session B1] Theme2 (1)	[Parallel Session C1] Theme5 (1)	[Parallel Session D1] Theme3
12:30				
<b>Lunch 12:30 -14:00</b>				
<b>Poster Session 13:00-14:00 (at Conference Room 6-A (6F))</b>				
14:00		[Parallel Session B2] Theme7	[Parallel Session C2] Theme8	SCA Management Board Meeting (SCA Management Board Members only)
15:30				
<b>Coffee Break 15:30 -16:00</b>				
16:00		[Parallel Session B3] Theme 4	[Parallel Session C3] Theme 1 (1)	SCA Joint Project Workshop
17:30				
<b>Break 17:30 -18:30</b>				
Reception organized by SCJ (Invitation only) 18:30-20:30				
<b>Adjourn 20:30</b>				

## Day 2

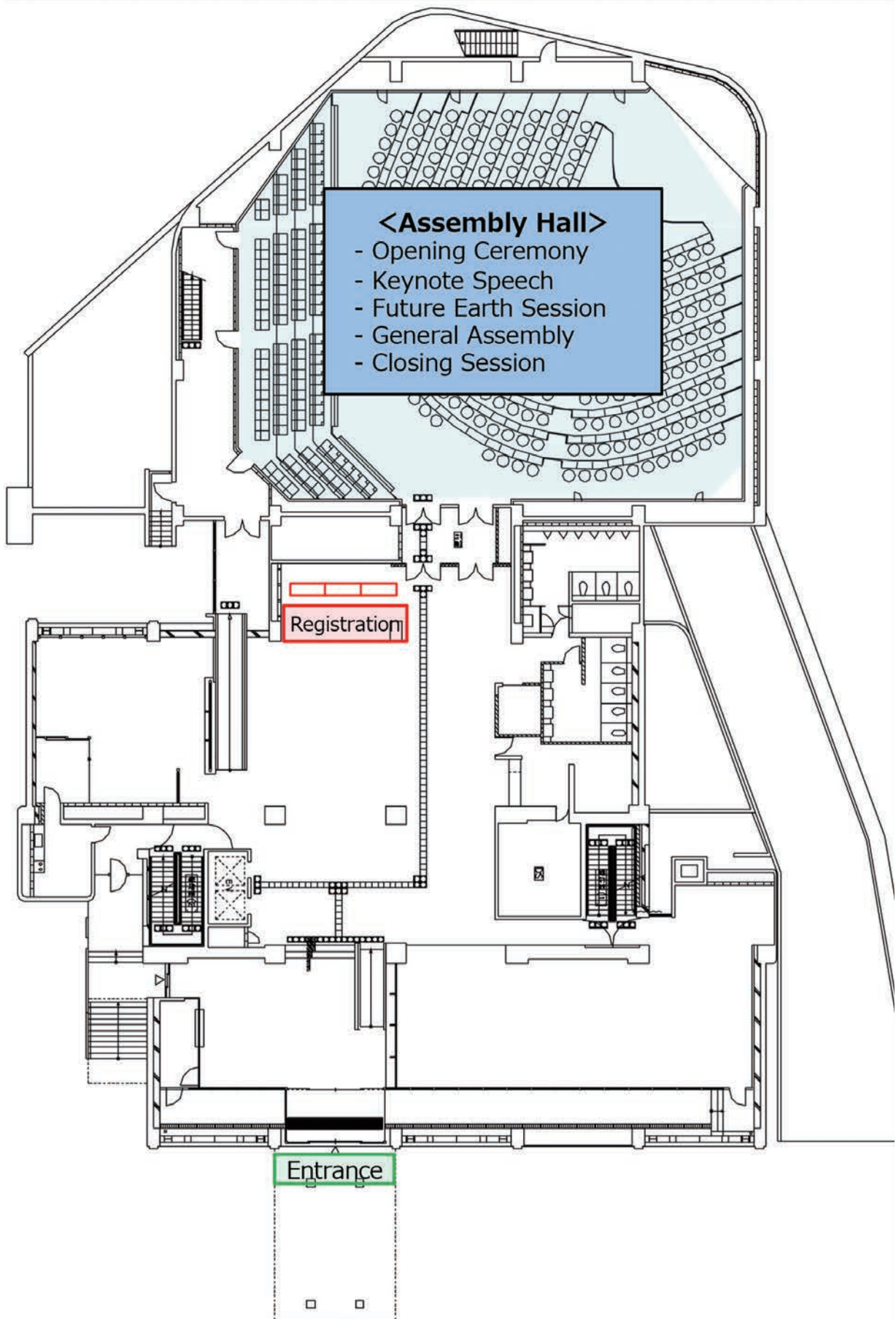
<b>Keynote Speech</b>				
9:00	Keynote Speech 2			
10:30				
<b>Break 10:30 -11:00</b>				
11:00		[Parallel Session B4] Theme 9	[Parallel Session C4] Theme 10	[Parallel Session D2] Theme 6
12:30				
<b>Lunch 12:30 -14:00</b>				
<b>Poster Session 13:00-14:00 (at Conference Room 6-A (6F))</b>				
14:00	Future Earth Sessions			
15:30				
<b>Coffee Break 15:30 -16:00</b>				
16:00		[Parallel Session B5] Theme1 (2)	[Parallel Session C5] Theme 5 (2)	Committee of Science and Society and Young Academy of Japan Session
17:30				
<b>Adjourn 17:30</b>				

## Day 3

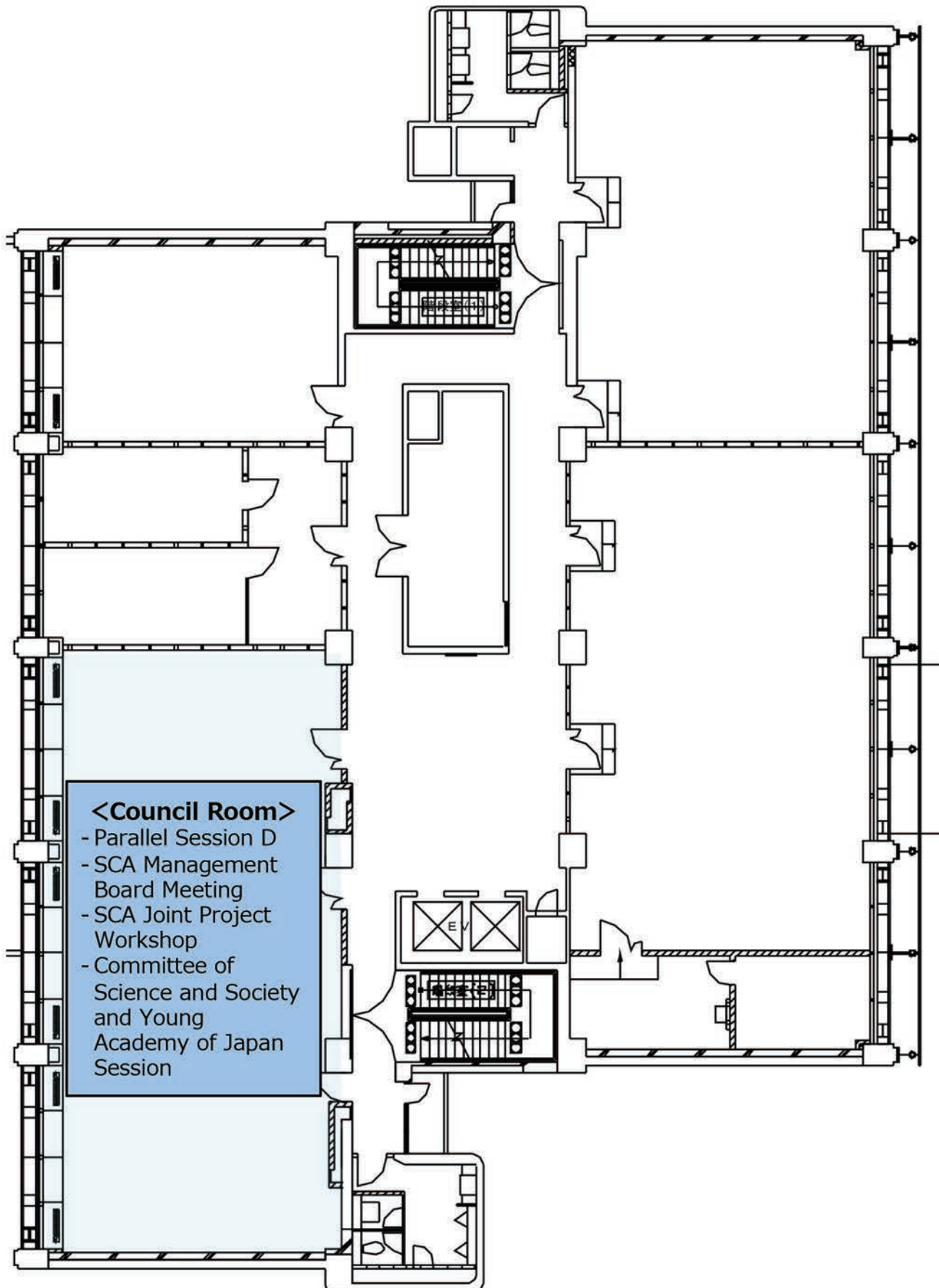
9:00	General Assembly (SCA member organizations only)	[Parallel Session B6] Theme 1 (3)	[Parallel Session C6] Theme 5 (3)	[Parallel Session D3] Theme 2 (2)
10:30				
<b>Break 10:30 -11:00</b>				
<b>Closing Session</b>				
11:00	Declaration of SCA Statement President of SCJ Greeting from President-Elect Flag Ceremony			
12:00				
<b>Lunch 12:00 -13:00 * for study tour participants only</b>				
13:00	Study Tour (international participants only)			
18:00				
<b>Adjourn 18:00</b>				



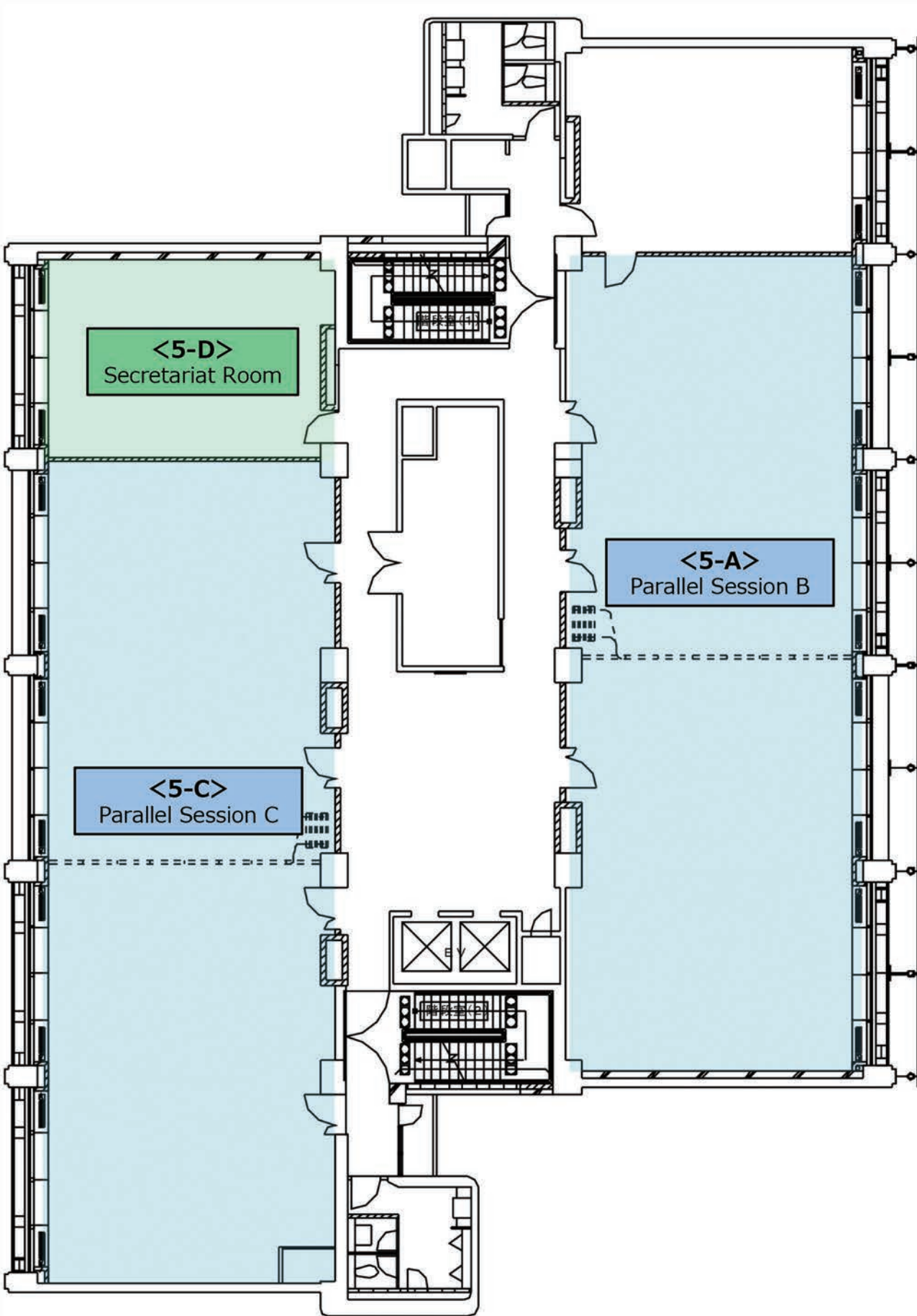
# Floor Map [1F]



## Floor Map [2F]

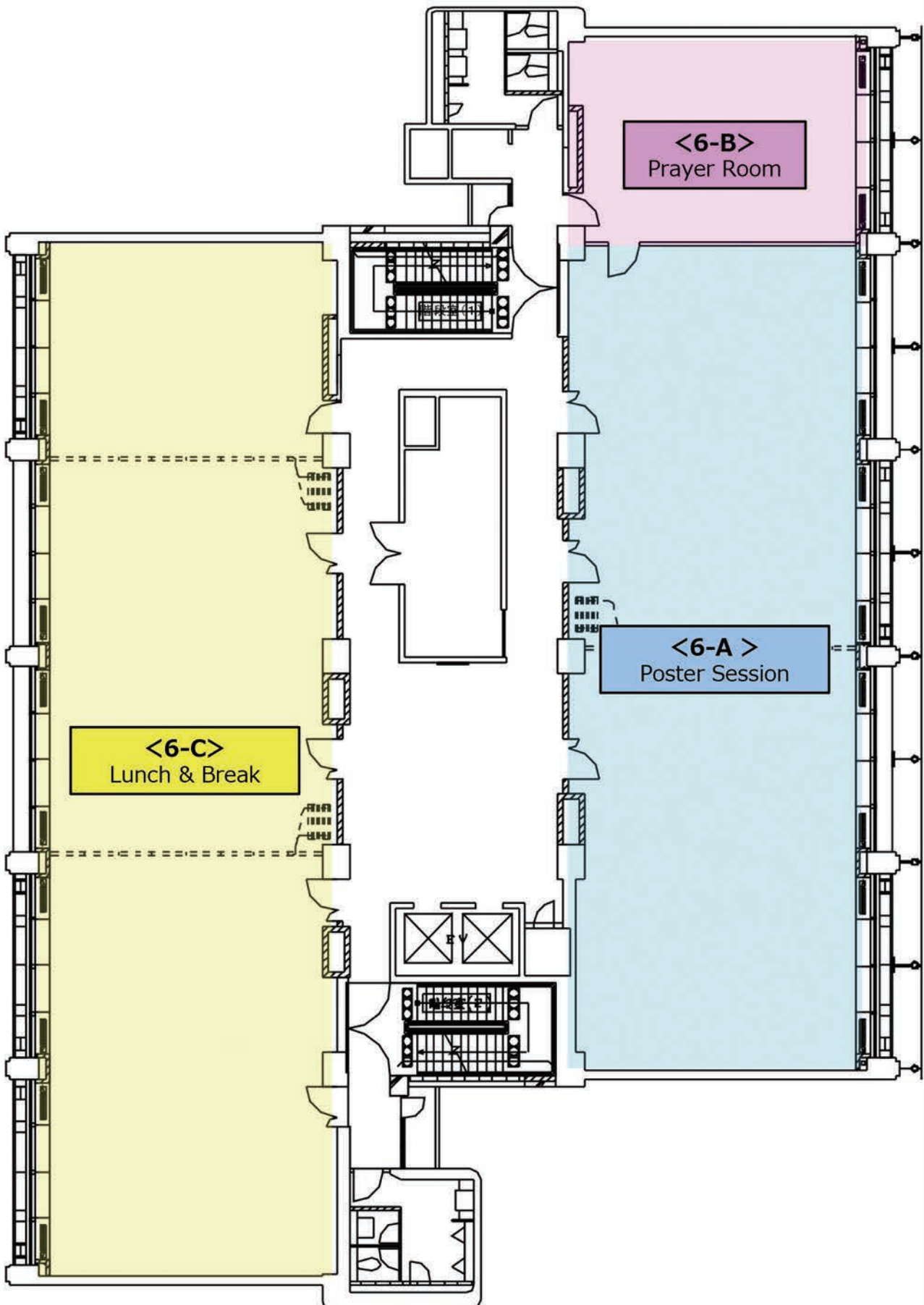


# Floor Map [5F]





# Floor Map [6F]



# Day 1

## Wednesday, 5th December

8:00 - **Registration**

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

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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)**

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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**

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**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)**

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

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**14:00 - 15:30 Parallel Sessions**

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### **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)**

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

SCA Management Board Members only

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

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### 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)**

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### **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**

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**18:30-20:30 Reception organized by SCJ**

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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**

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

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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**

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

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### 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**

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

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**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)**

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

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**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)**

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#### **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**

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

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SCA member organizations only

9:00 - 10:30 **Parallel Sessions**

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### 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**

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

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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**

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

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

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Study tour participants only

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

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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	<b>Gerwin Louis Tapan Dela Torre</b> 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	<b>Kimiko Nakayama</b> Kobe University	Relationship between weak consciousness concerning Community Organization Activities and personal factors of Japanese Public Health Nurses
2-15-P	<b>Hisaya Tanioka</b> Tanioka Clinic	In vivo Trabecular Architecture of the Vertebrae: Analysis of Aging, Gender, and Smoking
2-16-P	<b>Angelina Alampay Atienza</b> 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	<b>Nodoka Yamauchi</b> France Bed Co.,Ltd.	Design Principles of products for active seniors
2-18-P	<b>Sam Dominic Aquino Binag</b> 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	<b>Hiromi Kohori Segawa</b> 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	<b>Nobuo Nishi</b> 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	<b>Masanori Mori</b> 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	<b>Rina Hidayati Pratiwi</b> 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	<b>Ze Liu</b> Toyo University	Prediction of heatstroke occurrence & simulation of heat acclimation in labor working environment on Asian region
5-17-P	<b>Satoru Nishikawa</b> 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	<b>Campina Illa Prihantini</b> 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	<b>Haruo Hayashi</b> 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	<b>Keiko Tamura</b> Niigata University	Constructing the Concept of 'Build Back Better' for the Development of Sustainable Society
5-21-P	<b>Yusuke Amano</b> 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	<b>Kaoru Takara</b> 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	<b>Syamsul Maarif</b> 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	<b>Muchamad Malik</b> Proklamasi 45 University	An experimental study on the performance of Savonius wind turbines related to blade variation
1-20-P	<b>Erina Kojima</b> 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	<b>Kazuhiro Fukuyo</b> Yamaguchi University	Correlation and Causality between Economic Growth and Energy Consumption in the Asian Landlocked Countries
1-22-P	<b>Weijun Gao</b> 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	<b>Muhammad Noviansyah Aridito</b> 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	<b>Celine Grace Vicencio Causapin</b> 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	<b>Mriduchhanda Chattopadhyay</b> 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	<b>Shinichi Taniguchi</b> Waseda University	Effects of power-exchange openness to renewable energy on its penetration and social welfare
1-27-P	<b>Yasuko Yoshino</b> Nihon Univ.	Environmental Living Conditions and the Concept for a Bio-village in Sunan Yugur Autonomous County in China
1-28-P	<b>Mishan Shrestha</b> 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	<b>Haruka Ono</b> 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	<b>Xianqun Guo</b> 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	<b>Satoshi Araki</b> 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	<b>Mizue Y. Kissho</b> 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	<b>Akinori Yamabe</b> Jichi Medical University	Learning SDGs for University Students in Japan

#### [Theme 9]

ID No.	Presenter	Title
9-07-P	<b>Hoang Ngan Giang</b> National Graduate Institute for Policy Studies	Micro Level Behavior toward Technological Upgrading for Domestic Market
9-08-P	<b>Kunihiro Maeda</b> 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	<b>Somnath Sharma</b> 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	<b>Satoko Mori</b> Meisei University	Dilemmas and Challenges of Civil Society over SDGs 6: The Case of the Water Justice Movement in Asia
10-08-P	<b>Hezri A. Adnan</b> 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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**Neila Ramdhani<sup>1\*</sup>, Nurlaela Widyarini<sup>2</sup>**

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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<sup>[1]</sup>, increase capability in identifying life problems<sup>[2][3]</sup>, and increase their sense of responsibility towards their health<sup>[4]</sup>. 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<sup>[3]</sup> 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<sup>[5][6]</sup> which contains attempts of improving the agents' knowledge, attitude, motivation, behavior intention, personal skill, self-efficacy related to adolescent reproductive health<sup>[7]-[13]</sup>. In general, studies emphasize their evaluations more on the results to find out the effects of a program on knowledge, attitude and behavior<sup>[14]-[16]</sup>. 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<sup>[17]</sup>. 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<sup>[5], [18], [19]</sup>. 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<sup>[6], [20]</sup>, 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<sup>[21]</sup>. 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<sup>[22]</sup>.

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<sup>[21]</sup>.

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<sup>[23][24]</sup>, 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<sup>[6], [20], [25]</sup>

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

	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	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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