



**Coordinating Committee for Geoscience  
Programmes in East and Southeast Asia (CCOP)**

# **CCOP ANNUAL REPORT 2021**



**PROVISION OF  
GEOSCIENCE SOLUTIONS**



**DIGITAL TRANSFORMATION  
FOR FUTURE EARTH**



**PROMOTION OF  
EDUCATION**

**CCOP Technical Secretariat  
Bangkok**

# CONTENTS

- MESSAGE FROM THE CHAIRPERSON
- CCOP: VISION, MISSION AND STRATEGY
- MANAGEMENT AND ORGANIZATION
- HIGHLIGHTS FOR THE YEAR 2021
- TECHNICAL PROGRAMMES and ACTIVITIES
- PUBLICATIONS
- COOPERATION and PARTNERSHIP
- FINANCIAL HIGHLIGHTS
- LIST OF CONTACTS
- ABBREVIATION

**CCOP Technical Secretariat**  
CCOP Building, 75/10 Rama VI Road  
Thung Phayathai, Ratchathewi  
Bangkok, 10400, THAILAND  
Tel. +66 (0) 2644 5468 to 73; Fax. +66 (0) 2644 5429  
E-mail: [ccopts@ccop.or.th](mailto:ccopts@ccop.or.th)  
Website: <http://www.ccop.asia>

## MESSAGE FROM THE CHAIRPERSON

Dear friends,

On this occasion of the publication of CCOP 2021 Annual Report, on behalf of CCOP, from China's capital Beijing, I'd like to extend my sincere thanks to the CCOP Steering Committee, CCOP Advisory Group, Technical Secretariat, and all friends from CCOP Member Countries, Cooperating Countries and Organizations, for your outstanding contribution to the development of CCOP during the year of 2021.



In the past year, the CCOP family has been united and active to overcome the adverse impact of COVID-19 and made extraordinary achievements. We formulated and implemented of CCOP 2021-2025 strategic plan, drew a blueprint for the future work; We had the term transition of CCOP Steering Committee and CCOP Technical Secretariat, so does some of the CCOP Member Countries, Cooperating Countries and Organizations, to ensure the efficient operation of CCOP; We newly built our cooperation with organizations such as the International Commission on the History of Geological Sciences (INHIGEO), expanded the "circle of friends" of CCOP; We established the Research Center of Urban Geology (RCUG), participated in international scientific projects such as "Chemical Earth" "Global Karst" and "Deep Time Digital Earth (DDE)", implemented international cooperation in urban geology, groundwater, carbon neutrality and geohazards, which promoted the innovation of geosciences.

These achievements would not have been possible without the determined leadership of **Dr Datuk Shahar Effendi Bin Abdullah Azizi**, the former Chairperson, **Dr Sommai Techawan**, the former Vice Chairperson of CCOP Steering Committee, and the efficient organizing of CCOP Technical Secretariat led by its director, **Dr Young Joo LEE**, as well as the concerted efforts and strong support of leaders and experts from CCOP member countries, cooperation countries and organizations. Here I would like to express my heartfelt thanks and salute to all of you!

In the Chinese lunar calendar, 2022 is the Year of the Tiger. In traditional Chinese culture, tiger represent strength and vitality, as well as wisdom and courage. Let's join our hands together, do our best to combat COVID-19, and forge ahead in the spirit of the tiger. We need to seize the opportunity of full validation the Regional Comprehensive Economic Partnership (RCEP), deeply dock with the new international development concepts such as UN's 2030 Agenda for Sustainable Development, Paris Agreement on Climate Change, as well as the development strategies of each CCOP member countries, adhere to the concept of green development, continue to implement the CCOP 2021-2025 Strategic Plan, strengthen geological exchanges and cooperation, and make unremitting efforts to promote geoscientific and technological innovation and benefit the local people and jointly build a community of life on earth.

Finally, I wish all of you happy and healthy, and be a tiger with wings added in the year of 2022!

### **Dr Li Jinfa**

Chairperson of CCOP Steering Committee,  
Permanent Representative of China to CCOP,  
Vice President of China Geological Survey

## ■ CCOP: Vision, Mission and Strategy

**Vision:** To be the Leading Intergovernmental Geoscience Organization for Sustainable Development in East and Southeast Asia

**Mission:** To work together on advancing geoscience for better lives on a future earth, in-line with the goals of international conventions including the 2030 Agenda for Sustainable Development, the Sendai Framework, and the Paris Agreement, through:

- The application of geoscience knowledge and provision of technical solutions, provision of advice and geoinformation for economic development and sustainable management of the national resources and environment;
- Adapting to digital transformation in geoscience for future earth; and
- The promotion of education, capacity building and outreach.



### STRATEGIC FOCUS:

CCOP should play a leading role regionally in supporting national geoscience organizations contribution to the individual country achievements in meeting the goals of the international conventions, including, the 2030 Agenda for Sustainable Development (UN SDGs), the Sendai Framework for Disaster reduction 2015-2030, and the Paris Agreement, as guided by its Member Countries. The strategic aims for this strategy are identified as:

1. Provision of Geoscience Solutions, Advice and Reliable Information through Cooperation and Partnership
2. Adapting to Digital Transformation in Geoscience for Future Earth
3. Promotion of Geoscience Education, Capacity Building and Outreach.

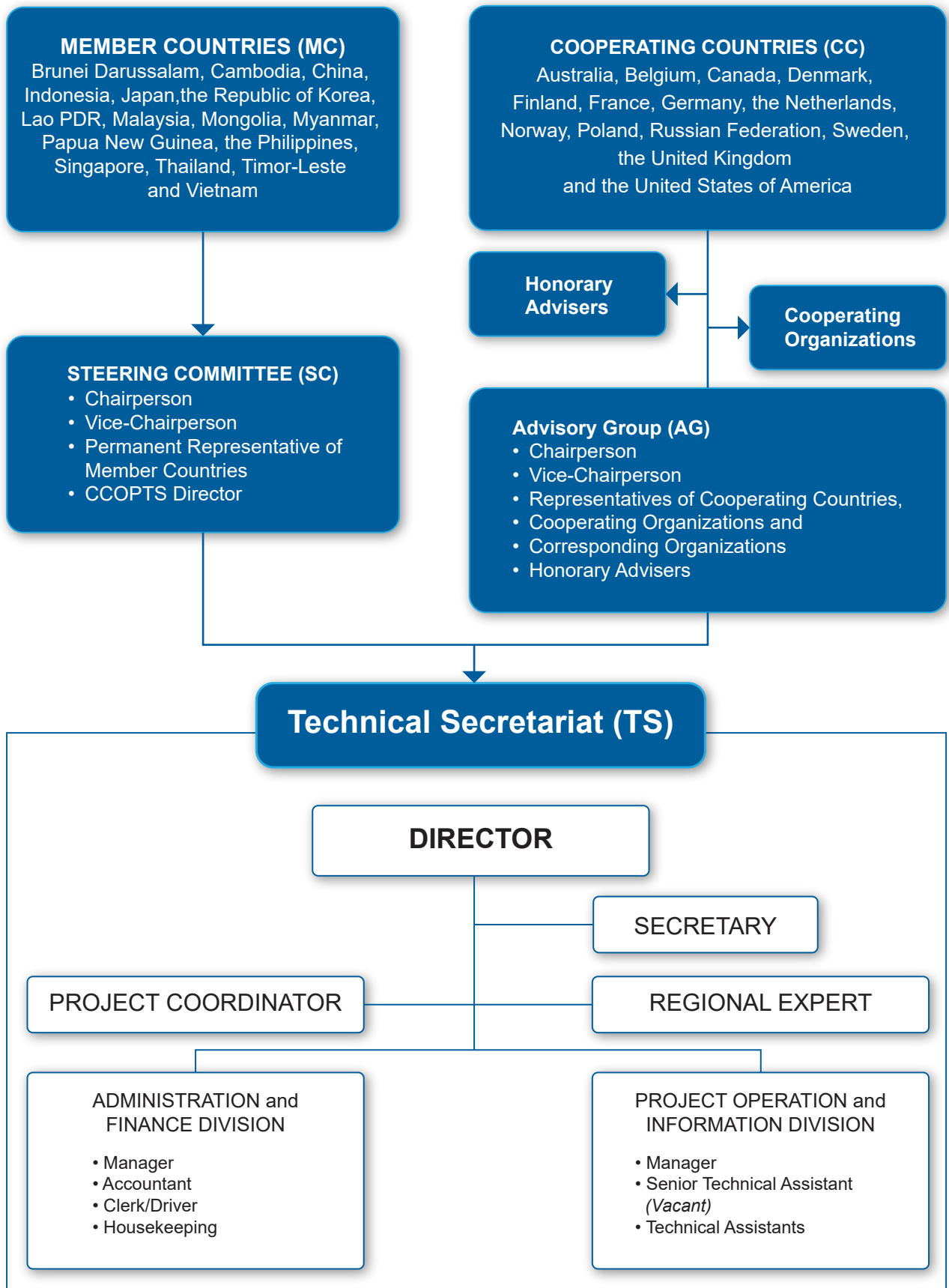
**Member Countries:** CCOP currently has a total of 16 Member Countries (MCs):

Brunei Darussalam, Cambodia, China, Indonesia, Japan, the Republic of Korea, Lao PDR, Malaysia, Mongolia, Myanmar, Papua New Guinea, the Philippines, Singapore, Thailand, Timor-Leste and Vietnam.

**Cooperating Countries:** CCOP also works closely with 14 Cooperating Countries (CCs): Australia, Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, Poland, Russian Federation, Sweden, the United Kingdom and the United States of America.

**Cooperating Organizations:** There are 17 Cooperating Organizations (COs) throughout the world: ASCOPE, CIFEG, CPC, EUROGEOSURVEYS, GETECH, IERI/GIST, IOC, IOMAC, IUGS, PETRAD, SPC, UNESCAP, UNEP, UNESCO, UKM, THE WORLD BANK and YES NETWORK.

# MANAGEMENT AND ORGANIZATION



As of 31 December 2021, the CCOP Technical Secretariat (TS) has 10 personnel, comprising three professionals, six supporting staff, and one out-sourced staff.



## COVID OUTBREAK

**The 76<sup>th</sup> CCOP Steering Committee Meeting (Melaka, Malaysia) have been postponed due to the COVID-19 (Coronavirus) outbreak.**

The COVID-19 (Coronavirus) pandemic has great impact around the world. To date, Malaysia is still experiencing the effects of the virus which has now reached an alarming level. With respect to the hosting of 76<sup>th</sup> CCOP Committee Meeting in Malaysia, the Department of Mineral and Geoscience (JMG) has closely monitored the situation since the last quarter of 2020. All factors are taken into consideration i.e., the outbreak situation in other countries including policies on international travels and quarantine requirements of CCOP Member Countries. In order to prevent the spread of COVID-19, fearing the safety of all CCOP Member Countries' delegations, JMG decided to reschedule the 76<sup>th</sup> CCOP Steering Committee Meeting in Melaka, Malaysia to June or July 2021, subject to the Government

of Malaysia policy on the Covid-19 pandemic. This request has been made due to the current COVID-19 situation in Malaysia as well as our government's policy to curb the pandemic. This is also in line with the member countries' current policies on international travel and quarantine requirements, in addition to our motto of "THE SAFETY OF DELEGATIONS IS OUR UTMOST PRIORITY"



The 76<sup>th</sup> CCOP Steering Committee Meeting had to be cancelled in Melaka, Malaysia. The Department of Mineral and Geoscience, Malaysia (JMG) withdrew as organizer and submit the role back to CCOPTS in Bangkok to host the meeting due to the situation of COVID-19 (Coronavirus) pandemic.

In cooperation with the Royal Thai Department of Mineral Resources (DMR), the 76<sup>th</sup> CCOP Steering Committee (SC) Virtual Meeting co-hosted by CCOP and Department of Mineral Resources (DMR) was held on Wednesday, 7 July 2021 respectively at 13:00-17:00 Bangkok time, in the DMR meeting room.

The newly appointment of Permanent Representatives of Member Countries and Representatives of Cooperating Countries and Cooperating Organization to CCOP.

MEMBER COUNTRIES	DESCRIPTION
Japan	On 9 April 2021, <b>Dr Shinsuke Nakao</b> has been promoted as Director-General, Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology (AIST) succeeded <b>Dr Yusaku Yano</b> as a new Permanent Representative of Japan to CCOP.
Republic of Korea	On 22 December 2021, <b>Dr Pyeong-Koo Lee</b> has been appointed as President, Korea Institute of Geoscience and Mineral Resources (KIGAM) succeeded <b>Dr Bok Chul KIM</b> as Permanent Representative of the Republic of Korea to CCOP.
Malaysia	On 15 February 2021, <b>Ybrs. Tuan Haji Hisamuddin Bin Termidi</b> has been appointed as Director General, Department of Mineral and Geoscience Malaysia succeeded <b>Datuk Shahar Effendi bin Abdullah Azizi</b> as Permanent Representative of Malaysia to CCOP.
Myanmar	On 11 June 2021, <b>Dr Thet Tin Nyunt</b> , Director General, Department of Geological Survey and Mineral Exploration, Ministry of Natural Resources and Environmental Conservation succeeded <b>Dr. Ye Myint Swe</b> as Permanent Representative of Myanmar to CCOP.
Thailand	On 1 October 2021, <b>Mr Pongboon Pongtong</b> has been appointed as the Director-General, Department of Mineral Resources (DMR), Ministry of Natural Resources and Environment succeeded <b>Dr Sommai Techanwan</b> as Permanent Representative of Thailand to CCOP.
Cooperating Countries	Description
Poland	On 14 June 2021, <b>PhD Michał Tomczak</b> , Senior Marine Geologist, Polish Geological Institute - National Research Institute succeeded <b>Dr Witold Szczuciński</b> as Representative of Poland to CCOP.
United Kingdom	On 1 November 2021, <b>Dr Karen Hanghøj</b> , Director, British Geological Survey (BGS) appointed <b>Dr David Schofield</b> , Science Director for National and Global programmes as a new representative of British Geological Survey, United Kingdom to CCOP.
Cooperating Organization	Description
EuroGeoSurveys	On 24 November 2021, <b>Dr Julie Hollis</b> has been appointed as Secretary-General, EuroGeoSurveys, the Geological Surveys of Europe, succeed <b>Dr Slavko Solar</b> .
PETRAD	On 23 March 2021, <b>Ms Berit Tvedt</b> has been appointed as Managing Director, International Programme for Petroleum Management and Administration (PETRAD), Norway, succeeded <b>Mr Bengt Hope</b> .

## MESSAGE OF CONDOLENCE:

**Dr Yoshihiko Shimazaki**, CCOP Honorary Adviser from Japan, was mostly remembered as the living history of CCOP. He was present at the actual birth of CCOP, at its first session in Quezon City, Philippines in 1966. From then onwards, he had been actively involved with CCOP's developments and endeavors. One of his most memorable events with CCOP was when he was chief of the Mineral Resources Section of ESCAP which was the UNDP Executing Agency for CCOP and got involved in convening the workshop on "Tectonic Development of East and Southeast Asia and its relation to Metalliferous and Hydrocarbon Resources" under the "Studies of East Asian Tectonics and Resources" (SEATAR)



**Dr Yoshihiko Shimazaki** was at the 76<sup>th</sup> CCOP Steering Committee Meeting, 4-5 November 2016 in Bangkok, Thailand

as a part of the IDOE Program (International Decade of Ocean Exploration, the 1970s).

**Dr Yoshihiko Shimazaki** was one of the authors of the 40<sup>th</sup> year CCOP anniversary book. His knowledge and passion for CCOP goes beyond what we can see and imagine. We have been missing him in the recent years, and will continue to miss both his physical and virtual presence.

**Shimazaki-san**, memories of you linger on. May you rest in peace in the heavenly dwelling, may you watch over your CCOP family in the land of the living.

With Sincere Sympathy, CCOP Family.

*With Deepest Sympathy*

**Dr. Yoshihiko Shimazaki**, CCOP Honorary Adviser from Japan, was mostly remembered as the living history of CCOP. He was present at the actual birth of CCOP, at its first session in Quezon City, Philippines in 1966. From then onwards, he had been actively involved with CCOP's developments and endeavors. One of his most memorable events with CCOP was when he was chief of the Mineral Resources Section of ESCAP which was the UNDP Executing Agency for CCOP and got involved in convening the workshop on "Tectonic Development of East and Southeast Asia and its relation to Metalliferous and Hydrocarbon Resources" under the "Studies of East Asian Tectonics and Resources" (SEATAR) as a part of the IDOE Program (International Decade of Ocean Exploration, the 1970s).

Dr. Yoshihiko Shimazaki was one of the authors of the 40<sup>th</sup> year CCOP anniversary book. His knowledge and passion for CCOP goes beyond what we can see and imagine. We have been missing him in the recent years, and will continue to miss both his physical and virtual presence.

Shimazaki-san, memories of you linger on. May you rest in peace in the heavenly dwelling, may you watch over your CCOP family in the land of the living.

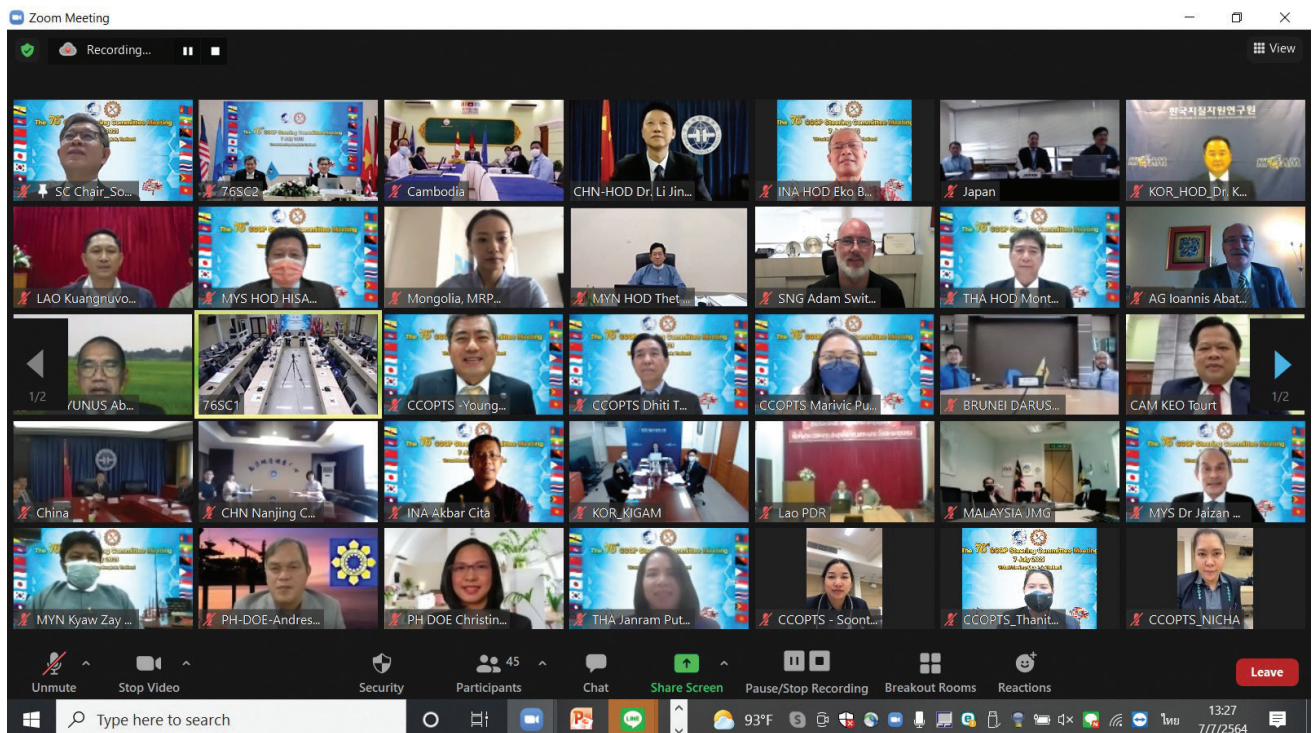
With Sincere Sympathy,  
CCOP Family

# HIGHLIGHTS FOR THE YEAR 2021

## THE 76<sup>TH</sup> CCOP STEERING COMMITTEE MEETING

The 76<sup>th</sup> CCOP Steering Committee (SC) Meeting was held virtually using the Zoom application hosted by the CCOP Technical Secretariat on 7 July 2021 in cooperation with the Royal Thai Department of Mineral Resources (DMR). The Meeting was attended by 67 delegates of the following Member Countries

(MC): BRUNEI DARUSSALAM, CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALAYSIA, MONGOLIA, MYANMAR, PHILIPPINES, SINGAPORE, THAILAND and VIETNAM. Also **Ioannis Abatzis** and **Dato' Yunus Abdul Razak**, Chairperson and Vice-Chairperson of the CCOP Advisory Group (AG) as well as the Director and staff of the CCOP Technical Secretariat (CCOPTS) were respectively presented.



**Dr Young Joo Lee**, CCOPTS Director, and **Ioannis Abatzis**, AG Chairperson delivered the welcoming remarks. **Dr Sommai Techawan**, Acting Chairperson of the CCOP Steering

Committee, Permanent Representative of Thailand to CCOP and DMR Director-General, officially opened the 76<sup>th</sup> CCOP Steering Committee Meeting.



The CCOPTS Director presented the CCOP Progress Report covering the period 1 January to 31 December 2020 and 1 January – 31 May 2021. The report included the administration and personnel, finance, technical cooperation and project support, technical activities, fellowships and grants, and publications.

The Meeting congratulated the CCOPTS for successfully carrying out CCOP activities amidst the ongoing pandemic.

The Meeting endorsed the following new initiatives tabled by the CCOPTS Director and tasked the CCOPTS to pursue these initiatives for securing its funding, if required, for implementation.

1. CCOP-KIGAM Urban Geology Project: Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia (2021-2024)
2. Adaptation Fund Project: Groundwater Resources in the Greater Mekong Subregion:

Collaborative Management to Increase Climate Change Resilience.

3. CCOP-AKCF Project Proposal: Raising capacity for sustainable groundwater management and securing clean water in ASEAN (2021-2024)
4. CCOP-QIMG (CGS) Book Project – Coastal Erosion and Mitigation in Asian Countries
5. CCOP Carbon Capture, Utilization and Storage (CCUS) Project
6. CCOP’s Expert Pool

The Indonesia Delegation suggested to include activities that can support the Member Countries’ economic situation during this COVID-19 pandemic, such as geopark and geoheritage wherein assistance to the local community are provided to alleviate impacts of the pandemic to their way of life. The CCOPTS Director took note of the suggestion and will find ways to carrying out such projects or activities.

The Meeting endorsed the nomination by the deputy permanent representative of the Republic of Korea and seconded by the Delegations of Thailand and Cambodia for China and Indonesia

as Chairperson and Vice-Chairperson of the CCOP Steering Committee respectively, from 1 October 2021 to 31 December 2023.



The Meeting recorded its thanks and appreciation for the valuable contribution of **Dr Sommai Techawan** as SC Vice-Chairperson from 1 January 2020, and acting SC Chairperson from 1 January 2021, and wished him a pleasant retirement on 1 October 2021.

The Meeting endorsed the revised CCOP budget for 2021 presented by the CCOPTS Director.

**Dr Dhiti Tulyatid**, CCOPTS Regional Expert, presented findings of the review of the country reports submitted at the 56<sup>th</sup> CCOP Annual Session in 2020, and the proposed new template for Member Country Reports.

The Meeting endorsed the timetable proposed by the CCOPTS Director for the election process of the CCOPTS Director for the term 1 April 2022 – 31 March 2025.

The Meeting appreciated the efforts of the CCOPTS in carrying out this review, and adopted the proposed new template of Member Country Reports which will be initially used for the upcoming 57<sup>th</sup> CCOP Annual Session scheduled in late 2021.

The Meeting endorsed the plan with timetable proposed by the CCOPTS Director for the recruitment of CCOPTS Headquarter-based Regional Expert for the term 1 May 2022 - 30 April 2024.

Mongolia Delegation confirmed hosting the 78SC meeting in March 2022 and CCOPTS will contact and provide more information about preparation of the meeting to Mongolia in due time.

Indonesia Delegation confirmed hosting the 58AS and 79SC meeting in November 2022.

Cambodia informed that they will not be able to host the 80SC meeting in March 2023 because there will be a General Election in Cambodia during mid of 2023. Instead, Cambodia Delegation offered their turn to host the 82SC in March 2024.

The Meeting highly appreciated the Member Countries for the harmony and flexibility in adjusting the hosting schedule as indicated in the table below.

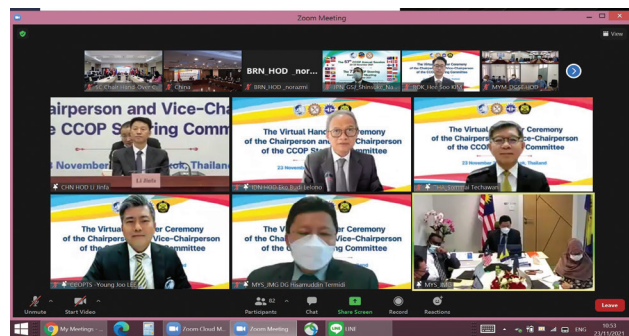
AS	SC	Year	Country
57	77	2021	Vietnam (Virtual)
	78	2022	Mongolia
58	79	2022	Indonesia
	80	2023	
59	81	2023	Lao PDR
	82	2024	Cambodia
60	83	2024	Malaysia

On behalf of SC Chairperson, CCOPTS Director **Dr Young Joo LEE** delivered the closing remarks. **Dr Young Joo LEE** conveyed thanks to the Department of Mineral Resources, Thailand for excellently co-hosting this 76<sup>th</sup> CCOP Steering Committee Virtual Meeting, and to all the delegates for having shared their valuable time in joining this meeting as well as to the AG Chairperson and Vice AG Chairperson. He expressed sincere appreciation to Vietnam, Mongolia and Indonesia for confirming to host the next CCOP Annual Sessions and Steering Committee Meetings. He hoped to be seeing each other physically in the next CCOP Annual Session and Steering Committee Meeting.

With this note, **Dr Young Joo LEE** officially closed the 76<sup>th</sup> Steering Committee Virtual Meeting.

## The Virtual Handover Ceremony of the Chairperson and Vice-Chairperson of the CCOP Steering Committee

The virtual Handover Ceremony of the Chairperson and Vice-chairperson of the CCOP Steering Committee was held at the DMR Conference Room, Petch Building, Department of Mineral Resources (DMR), Bangkok, Thailand, on 23 November 2021. The CCOP Technical Secretariat (CCOPTS) in cooperation with DMR hosted the ceremony.



Permanent Representative and delegation of Member Countries including: **BRUNEI DARUSSALAM, CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MYANMAR, PHILIPPINES, and THAILAND**, and CCOPTS staff participated in the ceremony. **Dr Dhiti Tulyatid**, Regional Expert of CCOPTS, facilitated the ceremony.

Below are the lists of Permanent Representatives of Member Countries to CCOP and their delegations;

**Ir Norazmi bin Othman**, Permanent Representative of Brunei Darussalam to CCOP

**H.E. Mr Cheap Sour**, Permanent Representative of Cambodia to CCOP

**Dr Li Jinfa**, Chairperson of CCOP Steering Committee, Permanent Representative of China to CCOP

**Dr Eko Budi Lelono**, Vice-Chairperson of CCOP Steering Committee, Permanent Representative of Indonesia to CCOP

**Dr Shinsuke Nakao**, Permanent Representative of Japan to CCOP

**Mr Hee Soo Kim**, Head, International Cooperation Department, Global Cooperation Division, Korea Institute of Geoscience and Mineral Resources (KIGAM), Republic of Korea



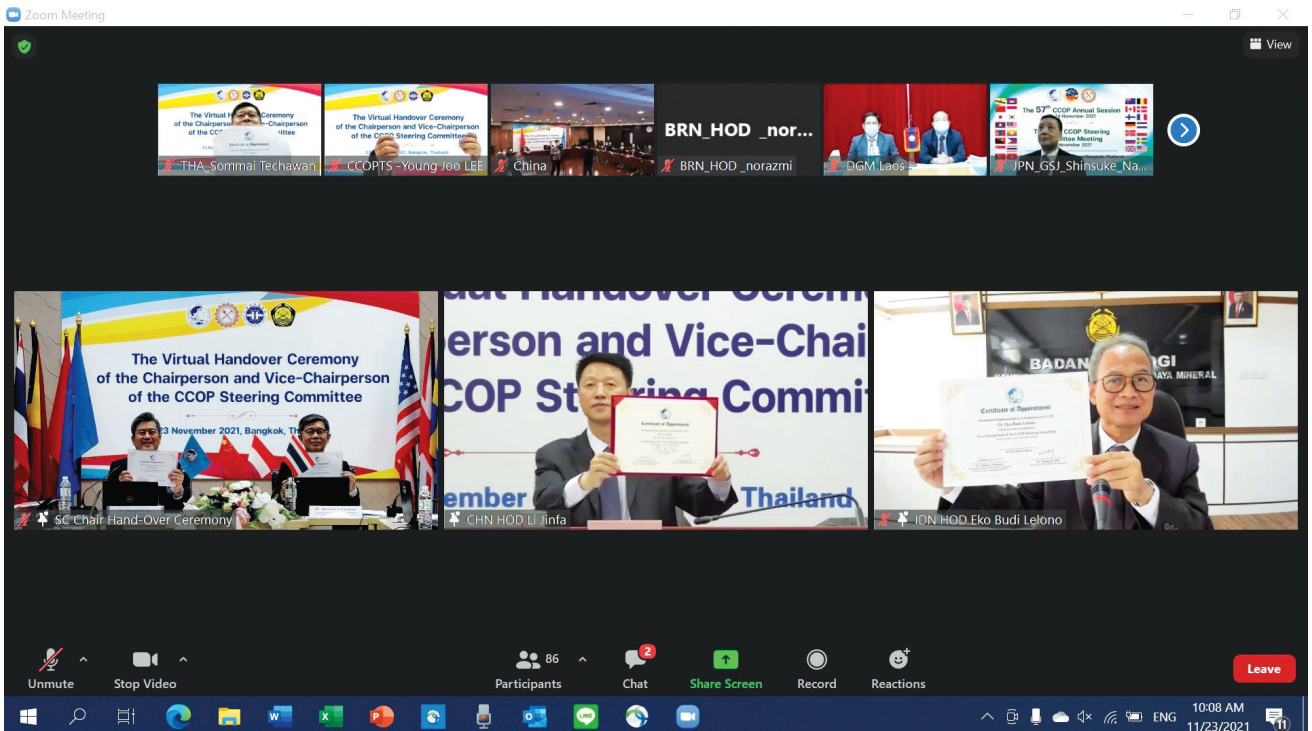
**Mr Kuangnuvong Telpvongsa**, Deputy Director, Department of Geology and Minerals, Ministry of Energy and Mines, Lao PDR

**Dr Thet Tin Nyunt**, Permanent Representative of Myanmar to CCOP

**Atty Wilfredo G. Moncano**, Permanent Representative of Philippines to CCOP

**Mr Suwapak Imsamut**, Acting Deputy Director General, Department of Mineral Resources, Thailand

**Dr Young Joo LEE**, CCOPTS Director delivered the greeting remarks at the opening of the Ceremony. Incoming chairperson, vice-chairperson and honorable delegates and guests witnessed the Signing Ceremony of Appointment and then the meeting host took group photographs.



The speeches: **Dr Sommai Techawan** former Chairperson of the CCOP Steering Committee, for 1 January 2021 – 30 September 2021, former Permanent Representative of Thailand to CCOP, former Director- General, Department of Mineral Resources (DMR), Ministry of Natural Resources and Environment, Thailand, delivered a speech. Then, **Dr Li Jinfa**, Permanent Representative of China to CCOP, Vice-President, China Geological Survey (CGS), Ministry of Natural Resources, China and the last speech by incoming Vice-Chairperson of the CCOP Steering Committee, for 1 October 2021 – 31 December 2023, gave a speech on the occasion of his appointment. **Dr Eko Budi Lelono**, Permanent Representative of Indonesia to CCOP, Head, Geological Agency, Ministry of Energy and Mineral Resources (MEMR), Indonesia, also delivered his speech. Permanent Representatives and Head of Delegation of Member Countries delivered their greeting remarks before the end of the ceremony.

**The 57<sup>th</sup> CCOP Annual Session**

The 57<sup>th</sup> CCOP Annual Session of the Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) was virtually held on 23-24 November 2021, using the Zoom application. It was co-hosted by

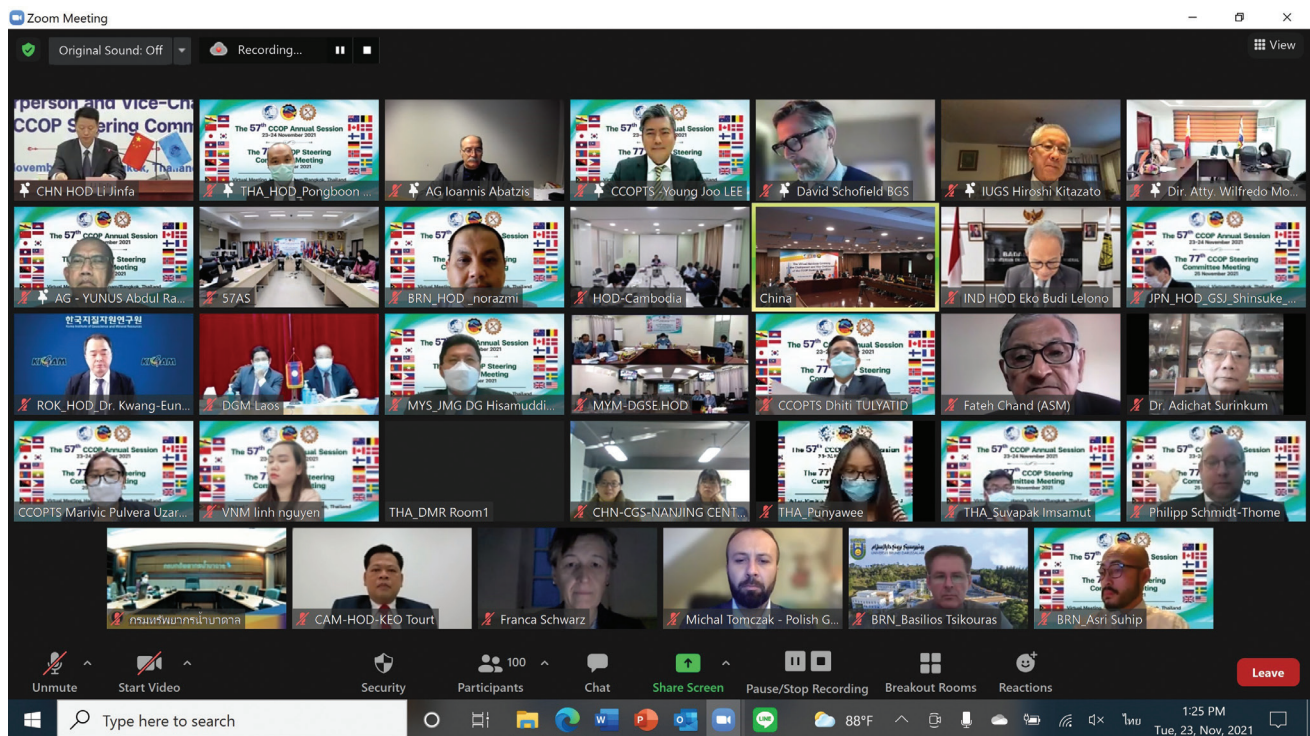
the General Department of Geology and Mineral Resources of Vietnam (GDGMV), the Royal Thai Department of Mineral Resources (DMR) and the CCOP Technical Secretariat (CCOPTS). The Session was attended by representatives of the following Member Countries:

**BRUNEI DARUSSALAM, CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALAYSIA, MONGOLIA, MYANMAR, PHILIPPINES, SINGAPORE, THAILAND and VIETNAM.**

The Cooperating Countries: **AUSTRALIA, CANADA, DENMARK, FINLAND, GERMANY, POLAND, RUSSIAN FEDERATION, and UNITED KINGDOM.**

The Cooperating Organizations: **EuroGeoSurveys, IERI, IUGS, UN-ESCAP, YES Network and Universiti Kebangsaan Malaysia (UKM).**

The Honorary Advisers of CCOP were also present at the Meeting. The staff of the CCOP Technical Secretariat (CCOPTS) were also in attendance.



The Welcome Addresses were delivered by **Mr Ioannis Abatzis**, Chairperson of the CCOP Advisory Group, Representative of Denmark to CCOP, Chief Geoscientific Adviser, Geological Survey of Denmark and Greenland (GEUS); and **Dr. Li Jinfa**, Chairman of CCOP Steering Committee, Permanent Representative of China to CCOP, Vice-President, China Geological Survey (CGS), Ministry of Natural Resources, China.

**Dr Le Quoc Hung**, Permanent Representative of Vietnam to CCOP, Deputy Director-General of the General Department of Geology and Minerals of Vietnam (GDGMV), Ministry of Natural Resources and Environment (MONRE), Vietnam officially opened the Session.

**Dr Le Quoc Hung**, Permanent Representative of Vietnam to CCOP, Deputy Director-General, General Department of Geology and Minerals of Vietnam (GDGMV); and **Dr Dhiti Tulyatid**, Regional Expert of CCOP Technical Secretariat

were appointed as Chairpersons of the Session. **Dr Young Joo LEE**, Director of CCOP Technical Secretariat (CCOPTS), summarized the Progress Report of CCOP including organizational changes (personnel), reorganize and systemize CCOPTS, the current financial situation, technical activities and cooperation and support from Cooperating Countries and Organizations during the year 2020-2021 with emphasis on the progress during 1 January to 31 December 2020 and 1 January – 30 September 2021.

The Session welcomed the newly elected Chairperson of the CCOP Steering Committee, **Dr Li Jinfa**, Permanent Representative of China to CCOP, succeeding **Dr Sommai Techawan**. Member Countries, Cooperating Countries and Cooperating Organisations had filed their written reports prior to the commencement of the Annual Session, and have been made available at the CCOP website, <https://ccop.asia/event/21> along with the presentation files.



The Session Chairperson, **Dr Dhiti Tulyatid**, presented his summary of the reports of the Member Countries on the topics of priority in 2020 & 2021.

<b>PRIORITY#</b>	<b>2020</b>	<b>2021</b>
1	Geohazards	Geohazards
2	Mineral Resources	Mineral Resources
3	Groundwater Resources	Groundwater Resources
4	Conventional Oil & Gas E&P	Urban Geology
5	Environmental Geology & Climate Change	Conventional Oil & Gas E&P
6	Geoheritage / Geopark	Environmental Geology & Climate Change
7	Marine Geology (+Coastal)	Geoheritage for Sustainable Development
8	Urban Geology	Geoscience Education
9	Geoscience Education	Geo-Survey
10	Geological Survey	Marine Geology & Renewable Energy
Others	UnConventional Energy & Geochemical Survey	Marine (Deep-Sea), CCS, Unconventional Energy,
Special Topic	GeoData & Information (ranked #4)	GeoData & Information (ranked #2)

The Session Chairperson, **Dr Dhiti Tulyatid**, presented his summary of the reports of the Cooperating Countries on the topics of priority in 2020 & 2021.

<b>PRIORITY#</b>	<b>2020</b>	<b>2021</b>
1	Geohazards	Renewable Energy
2	Mineral Resources	Mineral Resources
3	Geological Survey	Geohazards
4	Conventional Oil & Gas E&P	Environmental Geology & Climate Change
5	Groundwater Resources	Groundwater Resources
6	Environmental Geology & Climate Change	Urban Geology
7	Unconventional Energy	Marine Geology
8	Urban Geology	Geoscience Education
9	Geoscience Education	
10	Marine Geology (+Coastal)	
Others	Geoheritage/Geopark, Engineering Geology, & Carbon Capture & Storage (CCS)	
Special Topic	GeoData & Information (ranked #8)	GeoData & Information (ranked #4)

**Mr Ioannis Abatzis** applauded **Dr. Dhiti Tulyatid** on the summarized priorities of the Cooperating Countries, and commented that Renewable Energy as top priority reflects what the Cooperating Countries have been working on.

The Session Chairperson, **Dr Dhiti Tulyatid**, from the Cooperating Organization reports, identified top four topics of priority of equal scores, geohazards, urban geology, environmental geology & climate change, and geoscience education. These four topics are directly related to sustainable development goals and also very much in line with the CCOP Strategic Plan in conveying the geoscience information and advice to community basically.

**Dr Young Joo LEE**, CCOPTS Director, presented CCOP's New Initiatives and Proposed CCOP Workplan 2022.

**Mr Ioannis Abatzis**, on behalf of the CCOP Advisory Group, expressed his appreciation to the efforts of the CCOPTS in putting things together under the harsh condition of this pandemic. He took note that CCOPTS has related its activities to SDGs. He recommended adding SDG#7 for marine geology to cover offshore wind farm development.

In reply to Indonesia Delegation, **Dr. Young Joo LEE** informed that at the moment CCOP has no project on geopark, but will find ways to have activities through participation at the International Conference on UNESCO Global Geopark as listed in the Workplan 2022 under Strategic Aim I and other related geopark meetings.

In reply to Malaysia Delegation's request to participate in the CCOP-KIGAM Groundwater in Mekong River Basin, **Dr Young Joo LEE** informed that there will be a dissemination activity under this project in which Malaysia and the rest of the Member Countries can participate. Furthermore, ISGEO of KIGAM has been organizing training courses on groundwater open for all CCOP Member Countries to participate.

On the query of Japan Delegation regarding the new initiative on CCUS project, **Dr Young Joo LEE** informed that the CCS Consortium

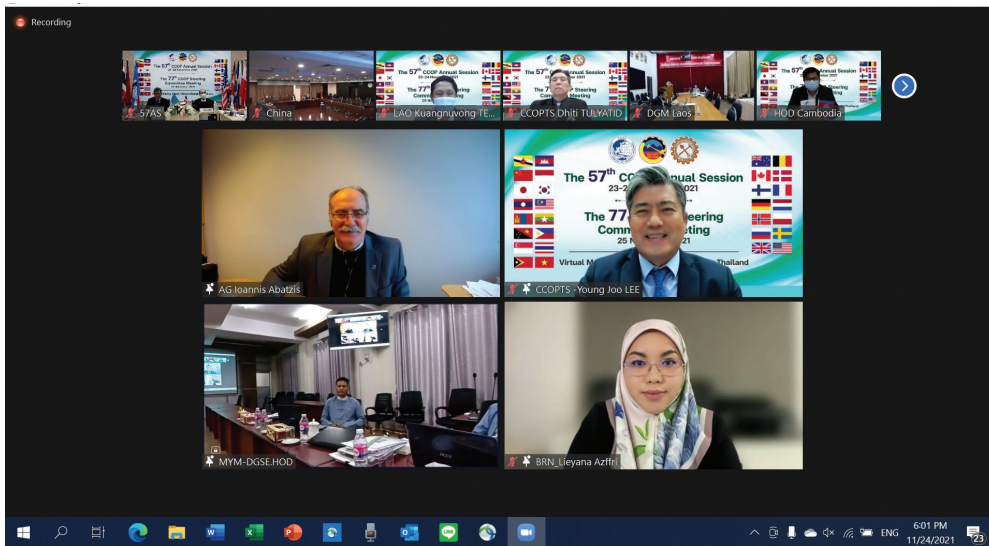
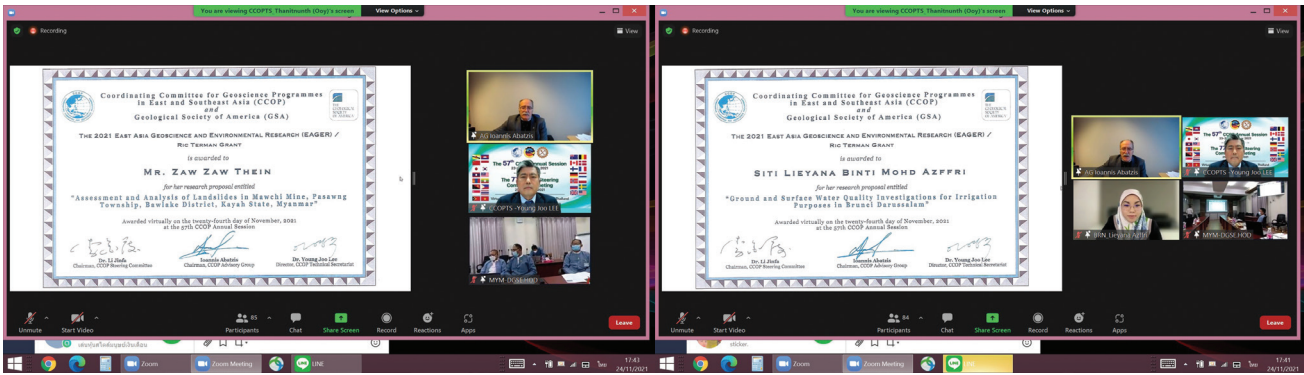
in Korea seems to focus on the depleted oil and gas fields. He may be able to confirm this after his planned visit to K-CCUS at the end of 2021. On the recommendation to refer to the past CCS projects of CCOP, **Dr Young Joo LEE** stated that the past CCS-M project was not able to achieve the objective of mapping since there was no funding. He expects that the new CCS project will continue from where the CCS-M project ends, and will not repeat activities that were already carried out.

Korea Delegation recommended that KIGAM be informed on the CCUS project with K-CCUS.

The Representative of Indonesia reported that the 58<sup>th</sup> CCOP Annual Session will be held sometime in October 2022, and the venue will either be in Lombok or in Bandung depending on the pandemic situation. The exact date in October and the venue will be confirmed in early 2022 with CCOPTS.

Two successful EAGER winners have been officially recognized at the Session as follows.

- **Ms Siti Lieyana Binti Mohd Azffri**, Ph.D. student of the Faculty of Science, Universiti Brunei Darussalam. Her research proposal is entitled "Ground and Surface Water Quality Investigations for Irrigation Purposes in Brunei Darussalam."
- **Mr Zaw Zaw Thein**, Ph.D. student of the Department of Geology, University of Yangon, Myanmar. His research proposal is entitled "Assessment and Analysis of Landslides in Mawchi Mine, Pasawng Township, Bawlake District, Kayah State, Myanmar."



**Dr Dhiti Tulyatid**, Chairperson of the 57<sup>th</sup> CCOP Annual Session, thanked all the delegates for the active contribution and discussion, and officially closed the session with the following remarks.

“I hope that we keep our cooperation and partnerships working towards the sustainable development goals for the benefits of all the member countries, as well as the cooperating

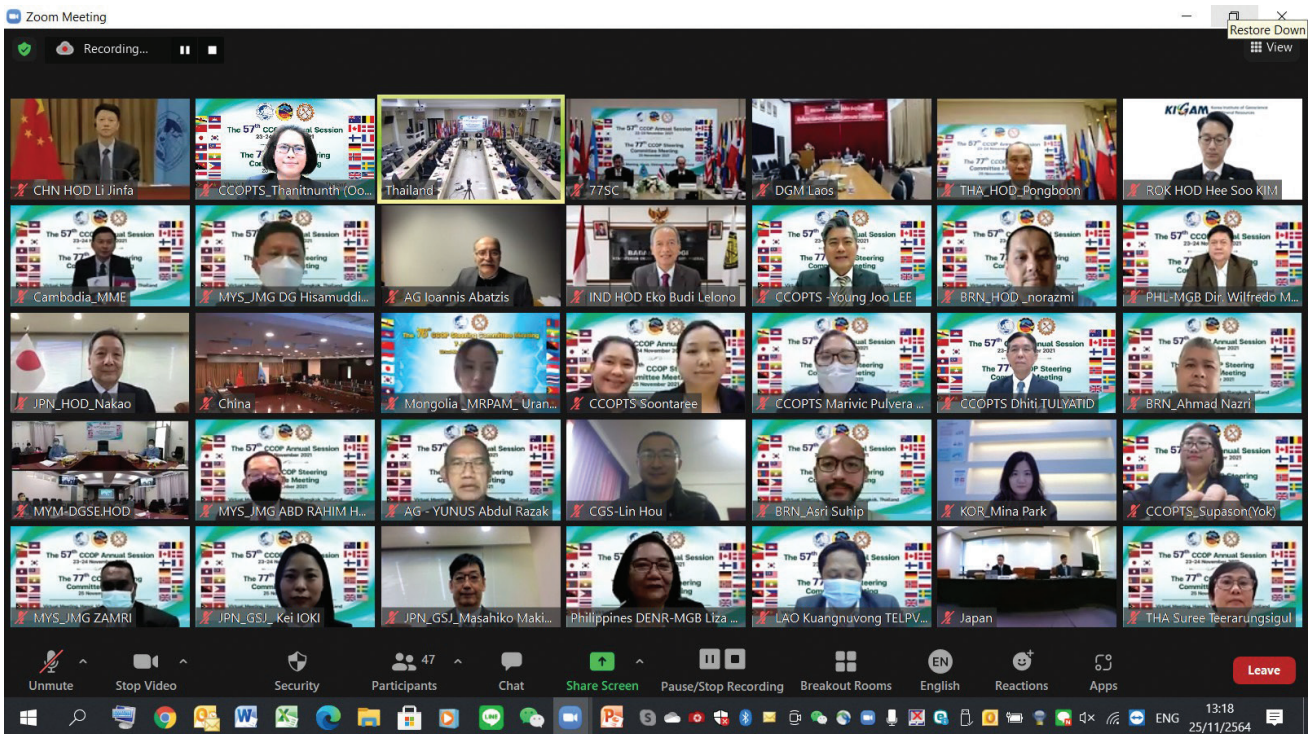
countries and organizations. I would also like to thank the staff of the CCOP Technical Secretariat, as well as the staff of the Royal Thai Department of Mineral Resources (DMR), in the organization of this Session. I also thank the Director-General of DMR for the provision of the meeting venue with great virtual meeting conference.”



## The 77<sup>th</sup> CCOP Steering Committee Meeting

The 77<sup>th</sup> CCOP Steering Committee (SC) Meeting was held virtually using the Zoom application hosted by the CCOP Technical Secretariat on 25 November 2021 in cooperation with the Royal Thai Department of Mineral Resources (DMR). The Meeting was attended by 70 delegates of the following Member Countries (MC): **BRUNEI DARUSSALAM, CAMBODIA,**

**CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALAYSIA, MONGOLIA, MYANMAR, PHILIPPINES, SINGAPORE, THAILAND and VIETNAM.** Also Ioannis Abatzis and Dato' Yunus Abdul Razak, Chairperson and Vice-Chairperson of the CCOP Advisory Group (AG) as well as the Director and staff of the CCOP Technical Secretariat (CCOPTS) were respectively presented.



**Dr Young Joo LEE**, CCOPTS Director, and **Ioannis Abatzis**, AG Chairperson delivered the welcoming remarks. **Dr Li Jinfa**, Chairperson of the CCOP Steering Committee, Permanent Representative of China to CCOP and Vice President of China Geological Survey, officially opened the 77<sup>th</sup> CCOP Steering Committee Meeting.

**Dr Young Joo LEE**, CCOPTS Director presented the CCOP Progress Report covering the period 1 January to 30 June 2021. The report included the administration and personnel, finance, technical cooperation and project support, technical activities, fellowships and grants, and publications. The director also reported on the virtual Handover Ceremony of the Chairperson and Vice-chairperson of the CCOP Steering Committee was successfully held at the DMR Conference Room, Petch Building, Department of Mineral Resources (DMR), Bangkok, Thailand, on 23 November 2021. The CCOPTS Director congratulated **Dr Li Jinfa**, as a New CCOP Steering Committee Chairperson and **Dr Eko Budi Lelono**, Permanent Representative of Indonesia to CCOP, Head of the Geological Agency, as a Vice-Chairperson and expressed his appreciation to the former Chairperson of the CCOP Steering Committee, **Dr Sommai Techawan**.

The Meeting endorsed the implementation of the CCOP Strategic Plan as reported by **Dr Dhiti Tulyatid**, CCOPTS Regional Expert and tasked the CCOPTS to pursue these strategic plan for securing its funding for successful implementation. New activities include the following projects: CCUS, CCOP-RCUG; and CCOP-Urban Geology Project. The meeting gave recommendation as follow: Expand the expert group to cover other aspects; Encourage MCs for new input or comments on needs and offers; and cooperate with CCs/COs and seek funding for projects in response to current issues towards sustainable development goals. The Chairperson of the Advisory Group suggested that CCOPTS balance and properly prioritize the geoscience sub-disciplines/topics according to MCs, CCs & COs' priorities.

**Dr Young Joo LEE**, Director of CCOPTS gave a report to the meeting. Meeting endorsed the

following new initiatives tabled by the CCOPTS Director and tasked the CCOPTS to pursue these initiatives and proposed workplan for securing its funding and implementation.

1. CCOP-KIGAM Urban Geology Project: Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia (2021-2024)
2. CCOP-RCUG (CGS) (Research Centre of Urban Geology) (2021-2025)
3. CCOP-QIMG (CGS) Book Project – Coastal Erosion and Mitigation in Asian Countries (2020-2022)
4. CCOP Carbon Capture, Utilization and Storage (CCUS) Project (2022 -2025)
5. CCOP Expert Group Network or Regional Expert Pool (REP); recruiting CCOP Regionl Expert on Urban Geology, Coastal & Marine Geology, and Groundwater.
6. Collaboration with Cooperating Country (COs) and Cooperating Organization (CCs)

The Meeting endorsed the proposed CCOP budget for 2022 as presented by **Dr Young Joo LEE**, CCOPTS Director with following comments.

**Dr Eko Budi Lelono**, Vice-Chairperson of CCOP Steering Committee, Permanent Representative of Indonesia acknowledged the reported increase of income and asked about the expense that would also increase as well for this year. He also mentioned about the proposed new initiative on technical assistance on Geopark in the previous SC meeting should be implemented. Indonesia supports this initiative because it is one of the best tools to speed up the sustainable economic development.

Regarding the summary on prioritized geoscience sub-disciplines achieved from country reports made during the 57<sup>th</sup> Annual Session as presented by the AS Co-chairperson, **Dr Dhiti Tulyatid**, MCs give top priority to geohazards and CCs focus on renewable energy and critical/strategic related georesources in support of net-zero emission (2050) and SDGs (2030).

**Mongolia Delegation** confirmed the hosting of the 78<sup>th</sup> CCOP Steering Committee Meeting (78SC) and planned to hold a physical meeting during 6-10 June 2022 in Ulaanbaatar, Mongolia. The Mongolia Delegation gave information on the proposed meeting schedule, venue and field excursion. CCOPTS will discuss with Mongolia organising team on proposed dates and mode of organization of the meeting and will announce accordingly.

**The Representative of Singapore** informed the meeting that he will not be able to attend the 78SC during the proposed dates. CCOPTS acknowledged his suggestion and will further discuss and confirm the dates with Mongolia and will inform MCs as soon as it is settled.

**Indonesia Delegation** confirmed the hosting of the 58AS and 79SC meeting in November 2022. The meeting venue will be held either in Bundung where is GA office is located or in Lombok. CCOPTS will discuss with GA about the exact dates and venue and will announce as soon as finalized.

On the 80<sup>th</sup> CCOP Steering Committee (80SC) Meeting (March/April 2023) CCOPTS Director informed that **Brunei Darrusalum delegation** has an intention of hosting 80SC. It is now in the process of proposing to the Ministry for the approval of the hosting of the 80SC and will be announced in the next SC Meeting.

**Lao PDR Delegation** updated that Lao PDR would confirm its hosting the either the face-to-face or virtual the 59<sup>th</sup> CCOP Annual Session (2023) and the 81<sup>st</sup> CCOP Steering Committee Meeting in Vientiane, Lao PDR, depending on the COVID-19 situation.

The Meeting acknowledged the proposed hosting of AS and SC with thanks and expressed appreciation to Mongolia, Indonesia and Lao PDR for the offers. The Meeting highly appreciated the Member Countries for the harmony and flexibility in adjusting the hosting schedule as indicated in the table below.

AS	SC	Year	Country
57	77	2021	Vietnam, CCOPTS (Virtual)
	78	2022	Mongolia
58	79	2022	Indonesia
	80	2023	Brunei Darrassarum (TBA)
59	81	2023	Lao PDR
	82	2024	Cambodia
60	83	2024	Malaysia

CCOPTS Director updated the meeting on the progress of the recruitment of CCOPTS Director with the term 1 May 2022 to 30 April 2025. CCOPTS received only one nomination, which is **Dr Young Joo LEE** from the Republic of Korea. The Meeting congratulated **Dr Young Joo LEE**, and endorsed his 2<sup>nd</sup> term nomination and appointment as CCOPTS Director from 1 May 2022 until 30 April 2025.

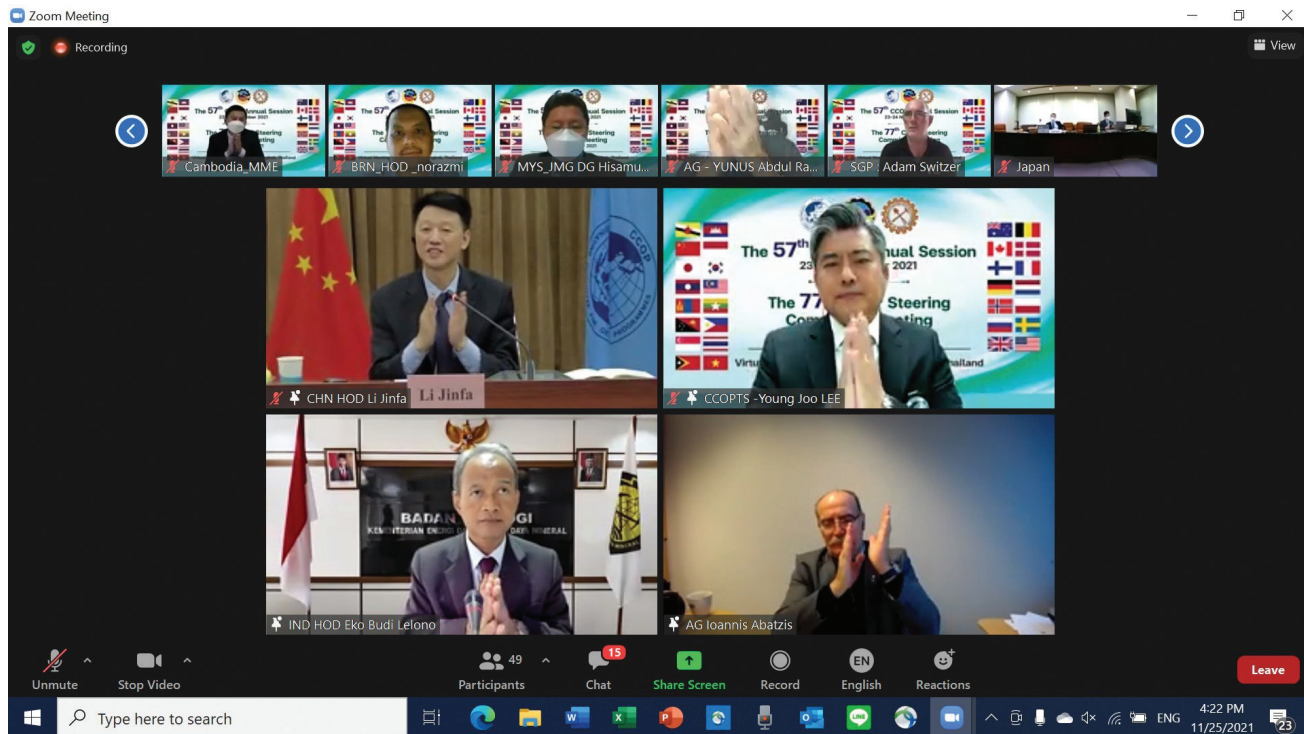
CCOPTS Director updated the meeting on the progress of the recruitment of CCOPTS Regional Expert with the term 1 May 2022 to 30 April 2024. CCOPTS received two nominations from Thailand and Mongolia respectively, the latter withdraw the application right before the deadline of submission. CCOPTS proposed to

extend the deadline of nomination submission and have received five applicants nominated from China. CCOPTS will conduct an interview soon and will report the outcome of the result accordingly. In this regard, CCOPTS Director **Dr Young Joo LEE** expressed his sincere thanks and appreciation to Thailand for allowing Dr Dhiti Tulyatid to serve as the HQ Regional Expert (since year 2018) and to **Dr Dhiti Tulyatid** for his hard work, effort and excellent services to CCOP.

**Dr Toshihiro Yamada**, Vice-president Asia, INHIGEO Japanese Member presented the introduction to the INHIGEO (International Commission on the History of Geological

Sciences): Membership Recruitment. The INHIGEO is an international body founded in 1967 by the IUGS (International Union of Geological Sciences). INHIGEO's aim is to promote studies in the history of geological disciplines (see ppt and the website: <https://www.inhigeo.com/>) Geoscientists who are interested in the history, historians and archivists in institutions and schools are welcome to join. INHIGEO is going to manage a session or

sessions on the history of geosciences at the 6<sup>th</sup> IPC in Khon Kaen (Thailand) in 2022 and at the 37<sup>th</sup> IGC in Busan (Republic of Korea) in 2024. If anyone interested in contributing to the work of the commission, please apply to the Secretary-General, **Martina Kölbl-Ebert**, [m.koelbl@imu.de](mailto:m.koelbl@imu.de). Nominations are reviewed annually by the INHIGEO Board and the decision regarding acceptance is conveyed at the subsequent INHIGEO Business Meeting.



The Chairperson of the 77<sup>th</sup> CCOP Steering Committee Meeting, **Dr Li Jinfu** delivered the closing remarks. CCOP SC meeting is very productive, though it's short. We have witnessed the development and progress of CCOP in the past year, and have drawn a blueprint for the future work of CCOP in the coming year. We suggest CCOP to communicate more closely with ASEAN secretariat, cooperate more in the areas such as geoscientific innovation and talent cultivation. He believe that with our joint efforts, CCOP will continue to benefit mankind and promote regional development, and will surely develop into a world-class regional geoscience organization in the near future. He had announced the successful conclusion of the 77<sup>th</sup> CCOP Steering Committee meeting. On behalf of CCOP, he wished all success in work,




good health and a happy family and look forward to seeing all soon after the epidemic.

**Dr Young Joo LEE**, Director of CCOPTS conveyed thanks to the Department of Mineral Resources, Thailand for excellently co-hosting this 77<sup>th</sup> CCOP Steering Committee Virtual Meeting. He also expressed his gratitude to all delegates for sharing their valuable time in joining this meeting as well as to the AG Chairperson and Vice-Chairperson. **Dr LEE** expressed sincere appreciation to Mongolia and Indonesia for confirming to host the next CCOP Annual Sessions and Steering Committee Meetings. He hoped to see each other physically in the next CCOP Annual Session and Steering Committee Meeting.

## ■ TECHNICAL PROGRAMMES AND ACTIVITIES

In 2021, a total of 48 training/workshop activities were carried out and most activities were conducted online due to the COVID-19 pandemic. With strategic focus on capacity building, knowledge sharing and technology transfer; the workshops, training courses,

symposiums, working group meetings and expert visits were conducted during the reporting period and Member Countries participation were highly appreciated. The reported activities follow the CCOP 2021 – 2025 Strategic Plan with three strategic aims as follow:

AIM I	AIM II	AIM III
Provision of Geoscience Solutions, Advice and Reliable Information through Cooperation and Partnership	Adapting to Digital Transformation in Geoscience for Future Earth	Promotion of Geoscience Education, Capability Building and Outreach.
		

DATE/VENUE	ACTIVITY	STRATEGIC AIM
<b>13 Jan</b> 13:00 Bangkok Time	Mekong groundwater project formulation grant update Online Meeting	1.2
<b>26 Jan</b> 16:00-18:00 Beijing time	The RCUG and EANUG Meeting	1.5
<b>26 Jan – 1 Apr</b>	UNESCO Lecture Series on Earth Materials for a Sustainable and Thriving Society	1.4
<b>2 Feb</b> 9:30 – 12:30 Beijing time	The 10 <sup>th</sup> Liaison Officials Meeting of The 11 <sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition 2021	2.2
<b>15 Feb</b>	CCOP-SEAPEX Meeting online	2
<b>26 Feb</b>	Critical Minerals Forum (Asia and Oceania) - Geoscience to support critical mineral discovery	
<b>Feb</b>	CCOP-KIGAM-UNESCO 2021 on GW Project meeting for monitoring well site selection with 5-MCs	1.2
<b>23-26 Mar</b> UN Conference Centre, BKK, online	Eighth Asia-Pacific Forum on Sustainable Development	1.4
<b>1 Apr</b> 10:00 Bangkok Time	DMR Special Talk # 2 on “Collaboration between DMR & CCOP: beyond Border and History toward Future”	1
<b>23 Apr</b> 13:00- 14:00 Bangkok Time	Online Meeting on CCOP-KIGAM-UNESCO 2021 GW Project TBA well installation in Thailand	1
<b>26-30 Apr</b> Geneva & online	Economic Commission for Europe Committee on Sustainable Energy; Twelfth session of the Expert Group on Resource Management	1.4

DATE/VENUE	ACTIVITY	STRATEGIC AIM
<b>27-29 Apr</b> <i>UN Conference Centre, BKK, online</i>	The Seventy-seventh session of the Economic and Social Commission for Asia and the Pacific (ESCAP)	1.4
<b>5 May</b>	Deep-Time Digital Earth (DDE) 2nd Working and Task Group Workshop	2
<b>12 May</b> <i>Hybrid meeting- 8:00 am to 6:00 pm</i>	The 1 <sup>st</sup> Carbon Neutrality (Xi'an) International Forum	1.3
<b>20 May</b> <i>Hybrid meeting- Nanning, China</i>	11 <sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition Online Forum of Directors General of China-ASEAN Geosciences Departments	2
<b>21 May</b> <i>Hybrid meeting- Nanning, China</i>	Online Forum of Principals of China-ASEAN Geosciences Universities	2
<b>27 May</b> <i>13:15 – 16:30 Bangkok Time</i>	MoU Signing Ceremony between CCOP and CGS on the Establishment of CCOP Research Centre on Urban Geology (CCOP – RCUG) and a Technical Workshop of CCOP – RCUG	1.5
<b>1 June</b>	Online Lecture of EMRD: Seminar on Industrial Trends for the Development of Resource Development Professionals (By Overseas Resource Development Association, Republic of Korea)	1
<b>28 Jun to 14 Jul</b> <i>Online</i>	GSJ Webinar on Practical Geological Survey Techniques- Application to Geological Disaster Mitigation	2
<b>29 – 30 Jun</b> <i>Online</i>	The 4 <sup>th</sup> China-ASEAN-CCOP training courses on capacity building on marine geoscience and geohazards reduction & prevention for ASEAN member states	3
<b>6 – 9 Jul</b> <i>09.00 – 11.30, Hanoi/Jakarta time</i>	6 <sup>th</sup> ASOMM's Joint Working Groups (JWG) Meeting and Associated Meetings	1
<b>7 Jul</b>	The 76 <sup>th</sup> CCOP Steering Committee Meeting	
<b>22 Jul</b>	Kick-off (Online) Meeting: CCOP - CGS Book Project on Coastal Erosion and Mitigation	1.1
<b>30 Jul</b>	Discussion on KIGAM Urban Geology Project	1.5
<b>2 Aug</b>	DDE SEA-TG on DDE Project Meeting (CCOP & Sun Yat-sen University)	3
<b>4 Aug</b> <i>13:30 – 17:20</i>	GDGMV-BGS workshop entitled "Smart geology for Hanoi and its role for sustainable urban development in Vietnam"	1
<b>4-6 Aug</b>	GeoThai 2021 Conference	1
<b>18 Aug</b> <i>13:30 – 15:15 (Bangkok Time)</i>	Kick-off (Online) Meeting: CCOP – KIGAM Urban Geology Project	1
<b>1 Sept</b>	CCOPTS- Vietnam (GDGMV) online Meeting: Preparation of the 57 <sup>th</sup> CCOP Annual Session and 77 <sup>th</sup> CCOP Steering Committee, November 2021, Hanoi, Vietnam	
<b>3 Sept</b>	CCOPTS-DMR meeting on technology transfer of the GDR Web System	3
<b>17 Sept</b>	Online meeting with new representative of Poland to CCOP	1

DATE/VENUE	ACTIVITY	STRATEGIC AIM
<b>22 Sept</b>	Consultation (Online) Meeting with BGS, CCOP – KIGAM Urban Geology Project: Proposed outline of CCOP UG Report and Questionnaire.	1
<b>27 Sept</b>	Online Meeting on CCOP-KIGAM 2021 GW Project TBA well installation in Lao PDR	1
<b>28 Sept</b>	Online meeting DDE-CCOP Collaboration	3
<b>30 Sept</b>	Online 2 <sup>nd</sup> Meeting on CCOP-KIGAM 2021 GW Project TBA well installation in Cambodia	1
<b>5 – 6 Oct</b> 9:00 a.m. – 4:00 p.m., (Singapore time)	The Stratigraphy of Sundaland: Current Perspectives and Future of the Science	1
<b>11 Oct – 15 Nov</b>	ISGeo Online Lectures on ‘Geological Field Mapping: Drawing Geological Maps’	3
<b>18 – 20 October</b>	IGDP Training/Workshop	2
<b>26-28 Oct</b> 8:00 a.m. - 13:00 p.m., (UTC time)	Online Geoscience Standards Training for DDE	2
<b>26 – 31 Oct</b> Nanjing, China & Online	DEEP 2021: 2021 International Symposium on Deep Earth Exploration and Practices	2
<b>1 – 2 Nov</b> Glasgow & Online	The 26 <sup>th</sup> UN Climate Change Conference of the Parties (COP26)	1
<b>2 – 4 Oct</b>	Online International Symposium of Resilient City	1
<b>4-5 Nov</b> 09:30 - 15:00 (Bangkok Time)	CCOP-KIGAM Geoscience Data Repository (GDR) Project Second Working Group Virtual Meeting/Workshop	2
<b>10 Nov</b>	The 2nd Online CCOP- KIGAM Urban Geology International Seminar	1
<b>23 Nov</b>	The Virtual Handover Ceremony of the Chairperson and Vice-Chairperson of the CCOP Steering Committee	
<b>23 – 24 Nov</b>	The 57 <sup>th</sup> CCOP Annual Session Meeting	
<b>25 Nov</b>	The 77 <sup>th</sup> CCOP Steering Committee Meeting	
<b>30 Nov</b>	The International School for Geoscience Resources (IS-Geo) of KIGAM presents regular online QnA course	3
<b>6 – 8 Dec 2021</b>	Virtual GEOSEA 2021: 5(+1) Years After ASEAN Integration: Milestones, Challenges and Perspectives for Geoscientist	1
<b>13-16 Dec 2021</b>	IGCP	1

## ■ PUBLICATIONS

### CCOP Annual Report 2020

The CCOP Annual Report for 2020 is available both in printed and digital formats. The report summarizes the projects and activities carried out during the year 2020, the financial standing and more.

It is of 64 colored pages and its digital file (reduced resolution) is about 13 MB file size, can be downloaded from this link, <https://ncloud.dotdream.co.th/index.php/s/6K4E9FxtYzE4NgW>

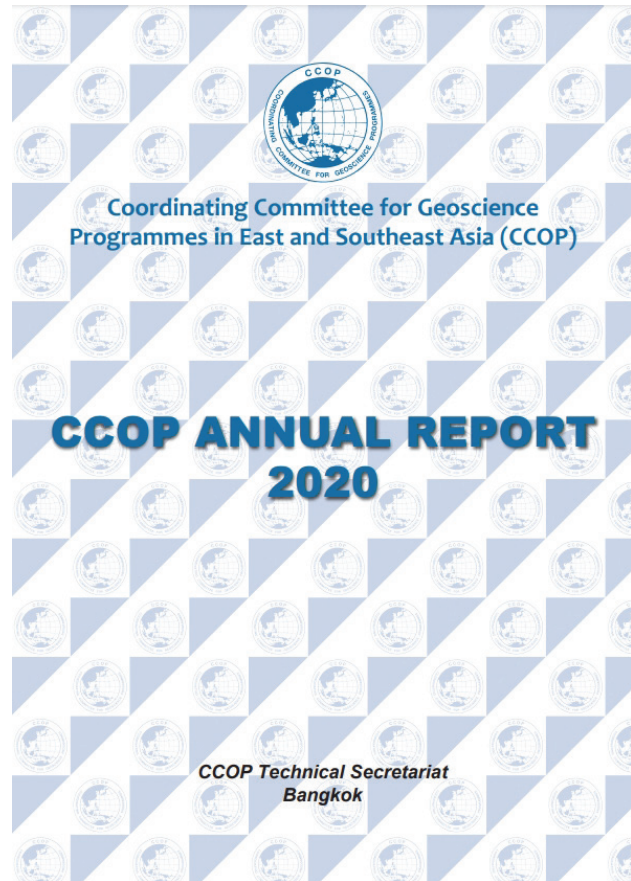
### CCOP Strategic Plan 2021-2025 Publication

The 5-year (2021-2025) Strategic Plan was prepared through the help and support from our Member Countries and Cooperating Countries through the establishment of a special Working Group. The CCOP Strategic Plan Working Group had overcome the COVID-19 pandemic through a number of online meetings facilitated by CCOPTS. **Dr Martin Smith**, Representative of UK to CCOP, help facilitated the drafting and editing of the new Strategic Plan.

The new strategic plan aims to support Geoscience partnership for Sustainable Development and better lives on Future Earth through three strategic aims:

1. The provision of geoscience solution, advice & information;
2. Adapting to digital transformation in geoscience for future earth; and
3. Promotion of geoscience education, capacity building & outreach.

This Strategic Plan is of 24 colored pages, and available both in printed and digital formats. Its PDF file for download (reduced resolution) is around 4MB file size, can be downloaded from this link, <https://ncloud.dotdream.co.th/index.php/s/6MtD2FTWoC38gcc>



## COOPERATION AND PARTNERSHIP

In the year 2021, CCOP continued to collaborate with its MCs, CCs and COs to implement the planned activities and adopt activities in new areas of concern. Outreach activities have continuously been developed, thanks to generous support by funding agencies and in-kind contribution by member countries, to optimize the benefits of the partly sponsored programmes. The table below summarizes the cooperation and activities of the Member countries, Cooperating Countries and Cooperating Organizations.

Table of Technical Activities with Member Countries, and Cooperating Countries & Organizations in 2021

COUNTRY	CCOP TECHNICAL ACTIVITIES
<b>1) Member Countries</b>	
<b>China</b>	CGS support the following: <ul style="list-style-type: none"> <li>Secretariat of the CCOP Research Centre on Urban Geology (CCOP-RCUG) <ul style="list-style-type: none"> <li>i. Technical Workshop of CCOP – RCUG, 27 May 2021</li> </ul> </li> </ul>
<b>Japan</b>	GSJ continues to financially and technical support the following projects: <ul style="list-style-type: none"> <li>Geoinformation Sharing Infrastructure for East and Southeast Asia (GSi) Project</li> <li>CCOP-GSJ Groundwater Project Phase IV</li> <li>GSJ Webinar on Practical Geological Survey Techniques - Application to Geological Disaster Mitigation -</li> </ul>
<b>Republic of Korea</b>	KIGAM support financially and technically the following projects: <ul style="list-style-type: none"> <li>Vulnerability assessment to climate change of groundwater system in Greater Mekong Subregion and comparative study of groundwater dependent ecosystem</li> <li>Geoscience Data Repository (GDR) system of CCOP Member Countries</li> <li>Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia (March 2021-2024)</li> </ul>
<b>2) Cooperating Countries</b>	
<b>United Kingdom</b>	The British Geological Survey (BGS) provided support to the development of a strategic plan and discussion around a draft business plan.
<b>United States of America</b>	The Geological Society of America (GSA) manages the 'Terman Fund' for the EAGER Award Project for CCOP Member Countries, which has been resumed in 2019 per the decision of the 72 <sup>nd</sup> CCOP Steering Committee Meeting in March 2019, Samui Island, Thailand. Two grants will be awarded at the 57 <sup>th</sup> CCOP Annual Session to be held on 23-24 November 2021.
<b>3) Cooperating Organizations</b>	
<b>IERI</b>	CCOP-IERI Internship at GIST
<b>IUGS</b>	SoutheastAsia Deep-time Digital Earth (DDE), under the framework of the International Union of Geological Sciences (IUGS) recognized Big Science Program - Deep-time Digital Earth (DDE) officially initiated at the 73 <sup>rd</sup> IUGS Executive Committee Meeting in Beijing, aims to establish linked earth big-data hubs for the Southeast Asia. This task is undertaken by the Sun Yat-sen University and relevant institutes in southeast Asian countries and coordinated by the Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP).
<b>UNESCO</b>	Update proposal of The Adaption Fund Title "Groundwater resources in the Greater Mekong Subregion: Collaborative management to increase climate change resilience."

# AIM I: Provision of Geoscience Solutions, Advice and Reliable Information through Cooperation and Partnership

STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP

OBJECTIVE 2: TO PROMOTE WORK ON SUSTAINABLE GEO-RESOURCES MANAGEMENT.

## DMR Special Talk # 2 on “Collaboration between DMR & CCOP: beyond Border and History toward Future”

On 1 April 2021, 10:00- 12:00 (Bangkok Time), the Department of Mineral Resources (DMR) organizes the platform entitled “DMR Special Talk” online and at DMR Meeting Room, 1st floor, Diamond Building, Bangkok. It’s aimed to open for technical experts or specialist from the international geoscience communities to share

knowledge, experience, capacity building and exchange of information.

Dr Young Joo LEE, Director CCOPTS was invited as a special guest speaker on the topic entitled “Collaboration between DMR & CCOP: beyond Border and History toward Future”. There are 60 participants from DMR and TS staff attended meeting online and offline. Reference YouTube link, <https://www.youtube.com/watch?v=s8khKVQfK5U>



การบรรยายพิเศษ ครั้งที่ 2/2564  
**กรมทรัพยากรธรณี ขอเรียนเชิญผู้สนใจ**  
 เข้าร่วมฟังการบรรยายพิเศษ  
 การดำเนินงานภายใต้ความร่วมมือทางวิชาการ  
 ด้านธรณีวิทยาและทรัพยากรธรณีระหว่างประเทศ ครั้งที่ 2/2564

**DMR SPECIAL TALK #2** หัวข้อ  
 “Collaboration between DMR & CCOP : beyond Border and History toward Future”

วันพฤหัสบดีที่ 1 เมษายน 2564  
 เวลา 10.00 น.  
 ณ ห้องประชุม ชั้น 1 อาคารเพชร  
 และผ่าน Zoom  
**รหัส 8316926659**

โดย Dr. Young Joo Lee  
 ผู้อำนวยการสำนักงานเสาธิการ CCOP

ส่วนงานธรณีวิทยาและทรัพยากรธรณี กองวิทยฐานะและจัดการทรัพยากรธรณี



## STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP

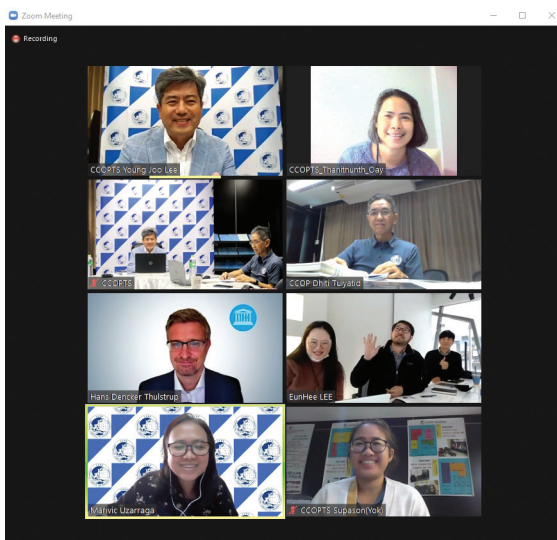
### OBJECTIVE 2: TO PROMOTE WORK ON SUSTAINABLE GEO-RESOURCES MANAGEMENT.

#### CCOP-KIGAM-UNESCO 2021 GW PROJECT

##### Kick-off meeting for monitoring well site selection

*Project Title: 'Vulnerability assessment to climate change of groundwater system in Greater Mekong Subregion and comparative study of groundwater dependent Ecosystem' (2020-2022)*

On **13 January 2021**, 13:30 – 14:30 (Bangkok Time) via Zoom Application, CCOP-KIGAM-UNESCO 2021 GW Project Kick-off meeting for monitoring well site selection was conducted online. Participated by **Dr Yongcheol KIM**, Leader of Groundwater Research Center, **Dr Eunhee LEE**, Senior Research Scientist, **Dr Seongkyun KIM** from KIGAM, **Dr Hans Dencker Thulstrup**, Representative of UNESCO-Jakarta to CCOP, Senior Programme Specialist, Water and Environmental Sciences, UNESCO Regional Science Bureau for Asia and the Pacific, and CCOPTS Director, **Dr Young Joo LEE** and his team.



**KIGAM** – funding, technical advice for GW monitoring device installation and system, provide training course for data analysis and system operation, and established GW monitoring network to CCOP, UNESCO and Member Countries.

**Dr Eunhee Lee**, KIGAM gave an introduction and presented the project overview,

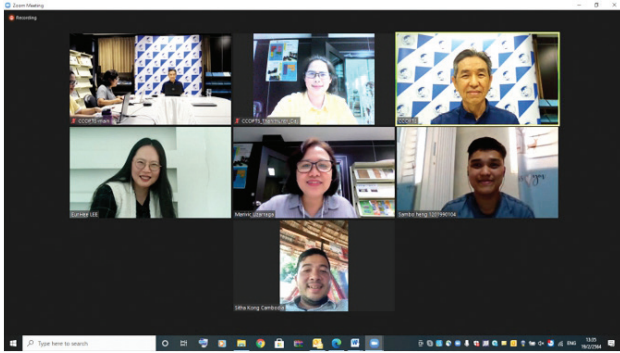
#### Background & Objectives

1. A number of 5 to 10 GMS will be installed along the Mekong River (Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam), to collect GW data set and open-access database (DB) portal.
2. Goals in 2021: the project team will start the installation of the groundwater monitoring network in GMS. In 2022, the team will continue its work on the installation of the groundwater monitoring network and operate on the automatic data transmission system
3. Once the data-sharing portal is completed, be operated by CCOP depending on the negotiation with the partner agencies. GW experts from KIGAM will support commissioning and training for system operation during the final step of the project.

**CCOP** – overall coordination, site recommendation and arrangement for well installation/ coordination with local government among MCs, Operation & management of monitoring network, and establishment of web-based portal

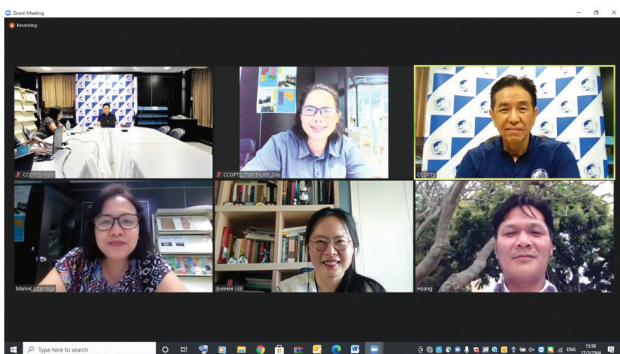
**UNESCO- Dr Hans** will discuss with UNESCO's partner and team about project type, framework that can be linked with GW Adaptation fund  
Expected Outputs & Outcomes – GMS Network, monitoring sites & data-sharing portal, national & regional GW experts.

On **19 February 2021**, 13:00-14:00 (Bangkok Time), CCOP-KIGAM-UNESCO 2021 GW Project on Well Installation in Cambodia Meeting was conducted online via Zoom Application. The meeting was attended by **Dr Eunhee LEE**, Senior Research Scientist (KIGAM), **Dr Kong Sitha**, Director and **Mr Sambo Heng**, Geologist from Geological Department, Ministry of Mines, Cambodia and **Dr Dhti Tulyatid**, Regional Expert, CCOPTS and the TS team. The aim of this meeting was to review, discuss and finalize the selection of well installation sites in Cambodia. **Dr Eunhee LEE**, Senior Research Scientist, KIGAM gave brief introduction of project, review and response to Cambodia's well recommendation. **Dr Kong Sitha** and team



will finalize two sites selection and revise well specification and quotation by early March 2021. **Dr Eunhee LEE** will provide information on the infrastructure requirements of the automated data transmission of the well-monitoring system. The meeting agreed to target well installations in Cambodia in June 2021, before the rainy season starts.

On **17 March 2021**, 13:00-14:00 (Bangkok Time), CCOP-KIGAM-UNESCO 2021 GW Project on Well Installation in Vietnam Meeting was conducted online via Zoom Application. The meeting was attended by **Dr Eunhee LEE**, Senior Research Scientist, KIGAM, **Mr Hoang Van Hoan**, Senior Hydrogeologist, Department of Groundwater Resources Fundamental Investigation, National Center for Water Resources Planning and Investigation, Vietnam and **Dr Dhiti Tulyatid**, Regional Expert, CCOPTS and the TS team. The aim of this meeting was to review, discuss and finalize selection of well installation sites in Vietnam. **Dr Eunhee LEE** gave a brief introduction and review & question about Vietnam well sites and appreciated the continuous support of Vietnam on CCOP-KIGAM GW Project for TBA monitoring and well installation based on the recommendation given by the Vietnam partner.



In 2021, the project team plan to install one monitoring well in Vietnam. In 2022, deployment for automatic groundwater monitoring and a wireless data transmission system will be carried

out at the installed well. Due to the current pandemic situation of COVID-19 and quarantine regulation that may affect to the working period if KIGAM team travels to install the monitoring system in Vietnam. Mr Hoan proposed to utilize the existing wells and will also provide information and detail of the existing 3 to 5 wells. In case of selected the existing well, the meeting agreed to target automatic monitoring well system installations in Vietnam during 2021 depending on the pandemic situation.

On **26 April 2021**, 13:00 – 14:00 (Bangkok Time) via Zoom Application CCOP-KIGAM-UNESCO 2021 GW Project on Well Installation in Thailand Meeting was conducted online via Zoom Application. The meeting was attended by **Dr Eunhee LEE**, Senior Research Scientist, KIGAM, **Dr Alin Chintraruck**, Head of International Relations Unit, and Geologist team from Department of Groundwater Resources (DGR), and **Dr Dhiti Tulyatid**, Regional Expert, CCOPTS and the TS team. The aim of this meeting was to review, discuss and finalize the selection of well installation sites in Thailand.

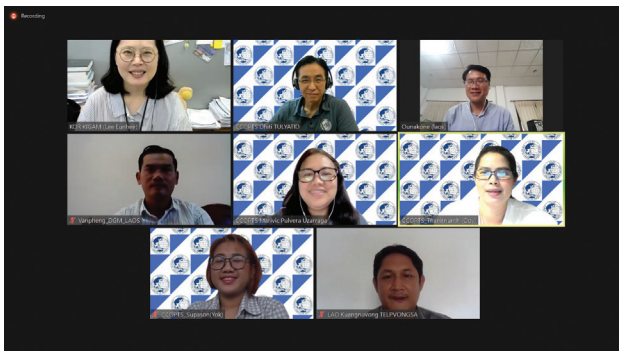
**Dr Eunhee LEE** gave a brief introduction and review & question about Thailand well sites and appreciate the continuous support of Thailand on CCOP-KIGAM GW Project for TBA monitoring and well installation. Based on the recommendation given by the Thailand partner. All Well sites suggested by Thailand are suitable for monitoring well installation. Based on the geographical proximity to the Vientiane, the Site 1 (Tha Sai Sa-at Temple, Nong Khai Province) is also an ideal location for the monitoring well installation. Accordingly, KIGAM asked DGR's opinion among (1) installing the well in Nakhon Phanom Provincial Office, (2) The Sai Sa-at Temple in Nong Khai Province, or both.



**Dr Eunhee LEE** kindly ask DGR support for installing wells in both selected sites. Once the well installation is finalized in 2021, KIGAM and CCOP plan to install automatic groundwater monitoring and wireless data transmission system in 2022. DGR expected to start on drilling and installation two selected well in May 2021. CCOP and KIGAM will coordinate, funding, technical advice and additional support for local and regional arrangement with DGR.

## MEETING FOR MONITORING WELL SITE SELECTION

### The online meeting on CCOP-KIGAM 2021 GW Project TBA well installation in Lao PDR



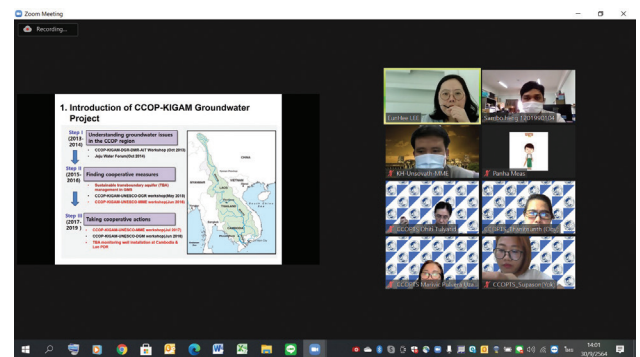
On **27 September 2021**, 13:00 – 14:00 (Bangkok Time), the CCOP-KIGAM 2021 GW Project on Well Installation in Lao PDR Meeting was conducted online via Zoom Application. The meeting was attended by **Dr Eunhee LEE**, Senior Research Scientist (KIGAM), Representatives from Lao PDR and TS team. The aim of this meeting was to review, discuss and finalize the selection of well installation sites in Lao PDR.

**Dr Eunhee LEE** gave presentation on the Overview of CCOP-KIGAM Groundwater Project and Site selection for TBA monitoring well: Lao PDR. Due to Covid-19 pandemic project extended to 2023. The recommended well site for Lao PDR is Wat Tai Yai Temple located in the Vientiane of Lao PDR. The well site suggested by Lao PDR is suitable for monitoring well installation in case Lao PDR would to relocate the well to better utilize it, project also fine with the internal discussion for site selection too. Request Lao PDR to grant access to one of the existing groundwater monitoring wells (the one located near the Mekong River) which KIGAM and CCOP installed in 2018 for the development of automatic groundwater monitoring system.

**Mr Ounakone Xayviliya** expected that the well installation can start next year due to the situation of COVID-19 pandemic in Lao PDR. Hopefully Covid-19 situation will end by next year, KIGAM, together with TS and expert from DGR will visit selected site and set up systematic monitoring in Lao PDR. The meeting adjourned at 14:00.

### The 2<sup>nd</sup> online meeting on CCOP-KIGAM 2021 GW Project TBA well installation in Cambodia

On **30 September 2021**, 14:00 - 15:00 (Bangkok Time), the 2<sup>nd</sup> CCOP-KIGAM 2021 GW Project on Well Installation in Cambodia Meeting was conducted online via Zoom Application. The meeting was attended by **Dr Eunhee LEE**, Senior Research Scientist, KIGAM, Representatives from GDMR, Cambodia and TS team. The aim of this meeting was to review, discuss and finalize the selection of well installation sites in Cambodia.



**Dr Eunhee LEE** gave brief introduction and review about Cambodia well selected sites from previous meeting on 19 February 2021. KIGAM plans to install at least two monitoring wells inside the Cambodia Territory. **Mr Sambo Heng**, GDMR, Cambodia gave presentation of 3-sites selection for Groundwater Monitoring Well survey with team last weeks. Meeting agreed to hire company or GW expert to have primarily survey and being a consultant on groundwater scanning in the selection sites and have report on GW scanning before decision to drilling well. Once KIGAM and CCOP received satisfied scanning groundwater report, CCOP will transfer consultant fee. Expected timeline of primarily survey should be done by October or November of this year. Once the well installation is finalized in 2021, KIGAM and CCOP plan to visit sites and install an automatic groundwater monitoring system and data wireless transmission system in 2022.

**STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP**

**OBJECTIVE 3: TO PROMOTE THE ESTABLISHMENT OF THE INTERNATIONAL CENTRE OF EXCELLENCE.**

**Economic Commission for Europe Committee on Sustainable Energy (UNECE); Twelfth session of the Expert Group on Resource Management (EGRM)**

The twelfth session of the Expert Group on Resource Management (EGRM) was held on 26-30 April 2021 at Geneva and online. The session was attended by more than 400 experts from the United Nations Economic Commission for Europe (ECE) member States and representatives of non-governmental organizations, academia and the private sector, as well as by independent experts. **Dr Young Joo LEE**, Director of CCOPTS was reelected as Vice-chair, EGRM Committee to the Bureau with effect from the close of the twelfth session for a period of two years until the close of the fourteenth session in 2023.

Opening remarks delivered by **David MacDonald**, Chair, EGRM, which was including on the status

of the development and implementation of the United Nations Framework Classification for Resources (UNFC) and the United Nations Resource Management System (UNRMS) and how UNFC and UNRMS can help governments, industry, investors, and international organizations respond to modern challenges in the sustainable development of energy and mineral resources, including socio-economic recovery from the COVID-19 pandemic. Other issues that will be raised, include: the significant interest of ECE member States in the socio-environmental-economic contract to operate based on just transition and a long-term vision aimed at having a positive impact on nature; the requirement of a comprehensive framework for traceability, transparency, and sustainability in supply chains; development of a sustainable finance taxonomy to promote a circular economy; and the requirement for a unifying sustainable resource management system.

**Palais des Nations, Geneva , Switzerland and ONLINE**

26 April (10:00) - 30 April (18:00) 2021

**Palais des Nations, Geneva, Switzerland**

**UNECE RESOURCE MANAGEMENT WEEK 2021**  
**ENABLING SUSTAINABILITY PRINCIPLES IN RESOURCE MANAGEMENT**  
**26-30 April 2021 | PALAIS DES NATIONS | GENEVA & ONLINE**



## GeoThai 2021 Conference

The GeoThai 2021 Conference was successfully organized by the Department of Mineral Resources, Thailand (DMR) and co-hosted by CCOP during 4-6 August 2021 at the meeting room, Petch Building, Department of Mineral Resources, Bangkok as well as online conference. The theme of GeoThai conference in 2021 is “Geosciences in the New Normal: Innovation for Sustainable Development”. It is designed to promote geoscience research and facilitate the exchange of new insights and ideas on geoscience-based innovative solutions for sustainable development. The conference held online attended by more than 500 participants, including geoscientists, academicians, policy makers and practitioners in related fields. Director of CCOPTS **Dr Young Joo LEE** was invited as a keynote speaker and gave presentation on title “CCOP towards Premier Intergovernmental Organization cross borders and beyond history” on 5 August 2021.

There were Online exhibitions and posters

presenting academic works online in the form of Visual Exhibitions via [www.dmr.go.th](http://www.dmr.go.th) which has an academic exhibition and virtual mineral resources management of the Department of Mineral Resources. There are 9 booths to see, namely 1. Khok Nong Na and Geology 2. National Committee and the management of the country's geological resources 3. The evolution of Thailand's geological map 4. Geological innovations and academic solutions 5. Fossils and wall whales 6. Geological Museum of Paleontology and natural science 7. International Years of Caves and Karst 2021 8. Thai Geosciences 9. International Cooperation and Thai Geoscience Journal. The posters presenting academic works a total of 70 works are divided into 7 groups as follows: 1. Geology and Mineral Resources Management 2. Geology and Mineral Resources 3. Geology and Fossils 4. Geophysics and Engineering 5. Geochemistry 6. Environmental Geology and Geosciences Disaster 7. Geology for conservation and learning.

**กำหนดการประชุมวิชาการธรณีไทย 2564 (GEOTHAI 2021) ผ่านระบบออนไลน์ วันที่ 5 สิงหาคม 2564**

- การบรรยายพิเศษ (Keynote Paper) เรื่อง CCOP towards premier intergovernmental organization cross borders and beyond history**  
Dr. Young Joo Lee  
Director of CCOP Technical Secretariat
- การบรรยายพิเศษ (Keynote Paper) เรื่อง Indochina – New Palaeozoic Data, Terranes and New Tectonic Hypotheses**  
Dr. Clive Burnett  
Expert Specialist
- การบรรยายพิเศษ (Keynote Paper) เรื่อง Cenozoic Tectonics**  
Dr. Chris Morley  
Expert Specialist
- Hydrogeochemical Features of Karst in the Western Thailand**  
Keynote speaker : ZHANG Cheng, MAIYAPONG Worakul, WANG Jin-liang, PU Jun-bing, LYU Yong, ZHANG Qiang, HUANG Qi-bo
- กรุงเทพฯ**  
Keynote speaker : สรต. สุทธิศักดิ์ ศรีสัมพันธ์
- Microfossils และธรณีวิทยา**  
Keynote speaker : ภาสกรย์ เจริญกิจรัตน์
- กลไกการขับเคลื่อน การอนุรักษ์แหล่งธรณีวิทยาของประเทศ**  
Keynote speaker : สุวัฒน์ พิษพงษ์เสถียร
- Stratigraphy, fossil assemblages and depositional environments of the mid-Palaeozoic of the Indochina terranes**  
Keynote speaker : Mongkol Uthachon, Hathairat Thassanasipak, Clive Burnett, Steve Kershaw and Peter Kospiner
- สถานการณ์ด้านประเทศไทย พ.ศ. 2564**  
Keynote speaker : อรุณ วัฒนวิทย์

**Member Countries/ Cooperating Countries and Organizations**

1. Australia	6. Japan (JSA, AIST)	11. Singapore (EOS)
2. Belgium	7. Republic of Korea (KIGAM)	12. Thailand (DMR)
3. Canada	8. Malaysia (JAMU)	13. The Philippines (DOP)
4. Denmark	9. Mongolia (MPPAM)	14. The Republic of China (ROC)
5. France	10. Myanmar (DMRE)	15. Vietnam (GCHM)
6. Germany	11. Papua New Guinea (DPMSP)	
7. India	12. The Philippines (DOP)	
8. Indonesia (DIA)		
9. Korea		
10. Malaysia (JAMU)		
11. Singapore (EOS)		
12. Thailand (DMR)		
13. The Philippines (DOP)		
14. The Republic of China (ROC)		
15. Vietnam (GCHM)		

**STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP**

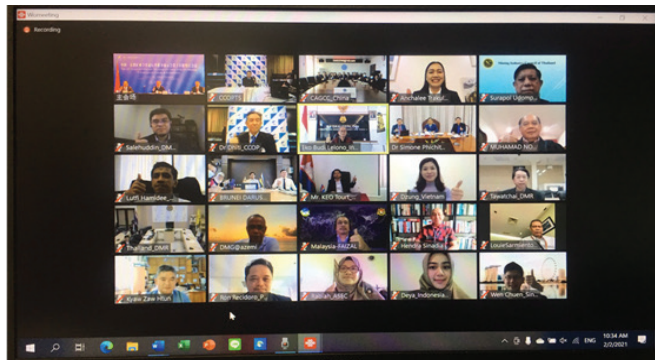
**OBJECTIVE 4: TO STRENGTHEN COOPERATION & PARTNERSHIP.**

**The 10<sup>th</sup> Liaison Officials Meeting of The 11<sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition 2021**

On **2 February 2021**, 09:30 - 12:30 (Beijing Time), online (Video Conference) and onsite at the Howard Johnson CAEXPO Plaza Nanning, China around 10 representatives in China and 50 representatives from ASEAN. The meeting started at 9:00 -9:30, **Ms Lyu Zhishan**, Assistant on CHAT function and greetings to all honorable attendees. On behalf of the CAMCF Secretariat, thank you all very much for participation in the 10<sup>th</sup> Liaison Officials Meeting of the 11<sup>th</sup> China-ASEAN Mining Cooperation Forum and Exhibition 2021.

Opening remarks was given by **Mr Ye Shaobo**, Director of the General Affairs Department, CAMCF Secretariat. Welcome Speech and Briefing on the 2019 Mining Forum and China-

ASEAN Mining Personnel Exchange & Training Center and other projects was given by **Mr Zhou Tao**, Secretary General, CAMCF Secretariat. **Mr Ye Shaobo** then informed the Information of relevant programs during the 2021 CAMCF. Offering 100 scholarships and hundreds of workshop places through the China-ASEAN Mining Personnel Exchange & Training Center will certainly be a great step forward in creating connections and cooperation in the regional mining industry. The National Geosciences Laboratory in Cambodia is an excellent example of international comity and mutual development continuing despite the current difficulties regarding the global pandemic. As **Mr Ye** points out, the future of international development takes into account the unique needs of every country, supporting the establishment of equitable relations.

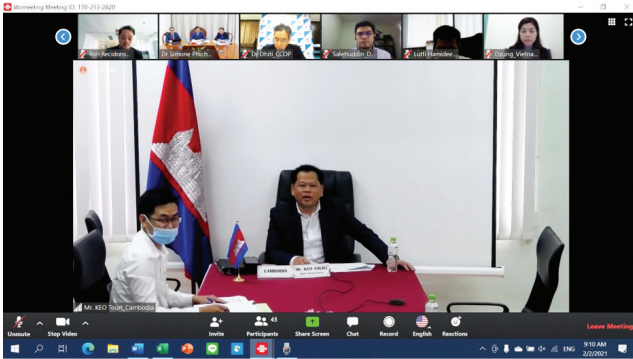


**Dr Dhiti Tulyatid**, Regional Expert, CCOP Technical Secretariat attended online meeting on behalf of CCOP. The contributions of the CCOP to regional cooperation have been long-standing and notable. Despite the many changes of the industry over the last 55 years, adaptability has provided continued success.





**Mr Afiq Aiman Jaya**, Geologist, Geology Unit/ National Seismic Centre (NSC) Geotechnical and Construction Materials Research Section, Department of Technical Services gave message on behalf of Ms. Hajah Sarimah binti Haji Awang, Senior Special Duties Officer, Head of the Division of Investment & Legal, Ministry of Development, Brunei. Brunei's involvement in developing sustainable green mining practices and other efforts to work closely with other members of the CAMCF are important for promoting closer ties in the region.



**Mr Keo Tourt**, Deputy Director General, General Department of Mineral Resources, Ministry of Mines and Energy, Cambodia gave remarks on vision for the future of cooperation between Cambodia, China and the region.



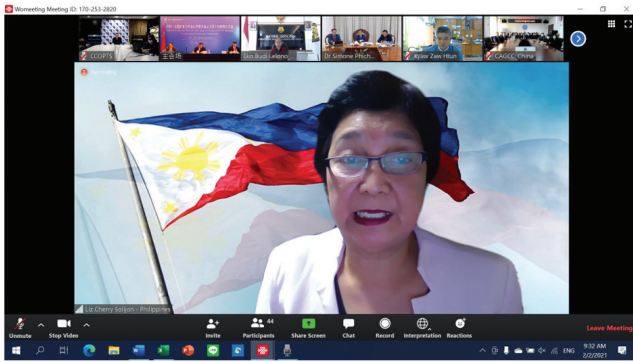
**Dr Eko Budi Lelono**, Head of Geological Agency, Indonesia gave remarks that the reforms and growing ties promoted by the Geological Agency in Indonesia have been especially productive through the sharing of data and regularizing mining permits.



**Dr Simone Phichith**, Director General of the Research Institute for Energy and Mines, Laos.

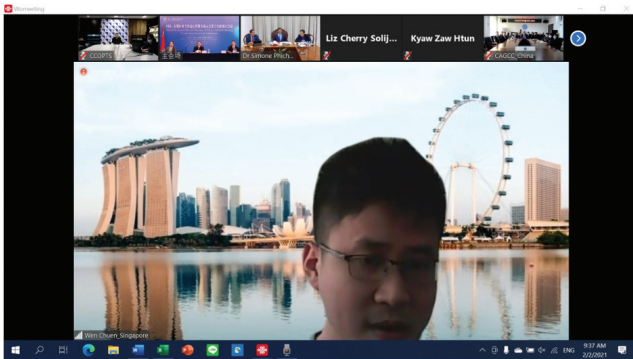


**Mr Kyaw Zaw Tun**, Assistant Director (Geologist), Department of Mines, Ministry of Natural Resources and Environmental Conservation, Myanmar.



**Mr Wilfredo G. Moncano**, Director of the Mines and Geosciences Bureau, Department of Environment and Natural Resources of the Philippines.

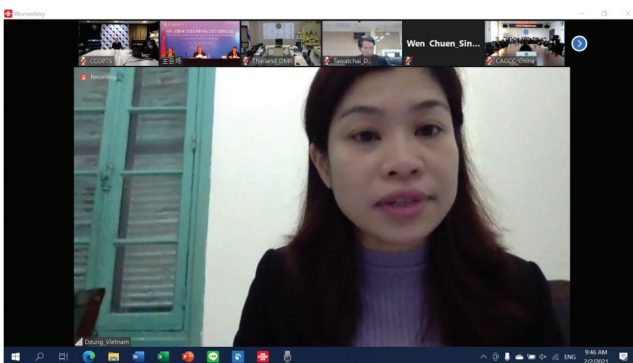
**Ms Liz Cherry Solijon** delivered a message on behalf of **Mr Moncano**. There is still uncertainty in mining due to public health considerations, there is a silver lining in metal prices, which have risen. This is especially true for precious metals



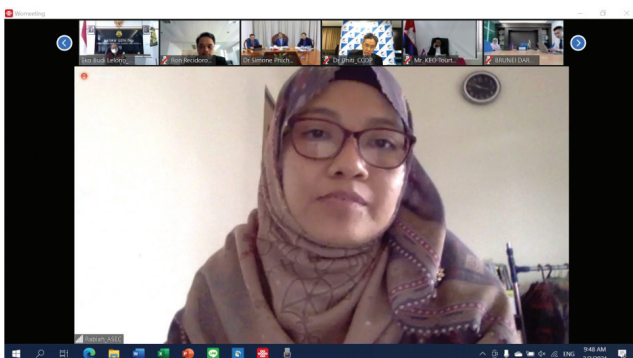
**Mr Phuan Wen Chuen**, Development Partner, Trade 1, Enterprise Singapore gave briefly message about Singapore's perspective on the global trading of mining



**Dr Tawatchai Chualaowanich**, Geologist (Senior Professional level), Department of Mineral Resources, Ministry of Natural Resources and Environment, Thailand. CAMCF will look forward to the great success of the Five-Year Plan and proceeding efforts as described by **Dr Chualaowanich**.



**Ms Tran Thi Thuy Dung**, Deputy Director of Dept. of Science, Technology and International Cooperation, GDGMV was delivered a message on behalf of **Dr Le Quoc Hung**, Deputy Director General of the General Department of Geology and Minerals in the Ministry of Natural Resources and Environment, Vietnam.



**Ms Rabiah Al Adawiyah T. Hussein**, Senior Officer (Minerals) of the Energy & Minerals Division, Sectoral Development Directorate, ASEAN Economic Community Department, ASEAN Secretariat.

CAMCF Secretariat expressed his thanks to all of honorable speakers that all remarks have been thoughtful and encouraging, truly epitomizing the spirit of cooperation and mutual development that characterizes China-ASEAN mining relations. All participants had snap shot of group photos together before ending forum.

### CCOP-SEAPEX Online Meeting

On **15 February 2021**, 14:00- 15:00 (Bangkok Time), SEAPEX and CCOPTS team had meeting online via Zoom Application on future collaboration. **Dr Young Joo LEE**, Director CCOPTS gave a presentation on CCOP introduction, CCOP activities, cooperation and potential collaboration with SEAPEX. **Mr Ian Cross** is interested in CCOP's work on Geoscience Big data. **Dr Young Joo LEE** explained that there are several projects with CCOP Member Countries such as GSi Project supported by GSJ (Japan), GDR project supported by KIGAM (Korea) with contents on mineral and rock data sample, Magnetic Anomaly Map compilation by GSJ (Japan), etc. **Mr Ronald Tay**, SEAPEX (Bangkok) is interested in outcrop and integrate map in Malaysia and Korea. He informed that SEAPEX (Bangkok) will have monthly and technical online meeting which CCOP can join.

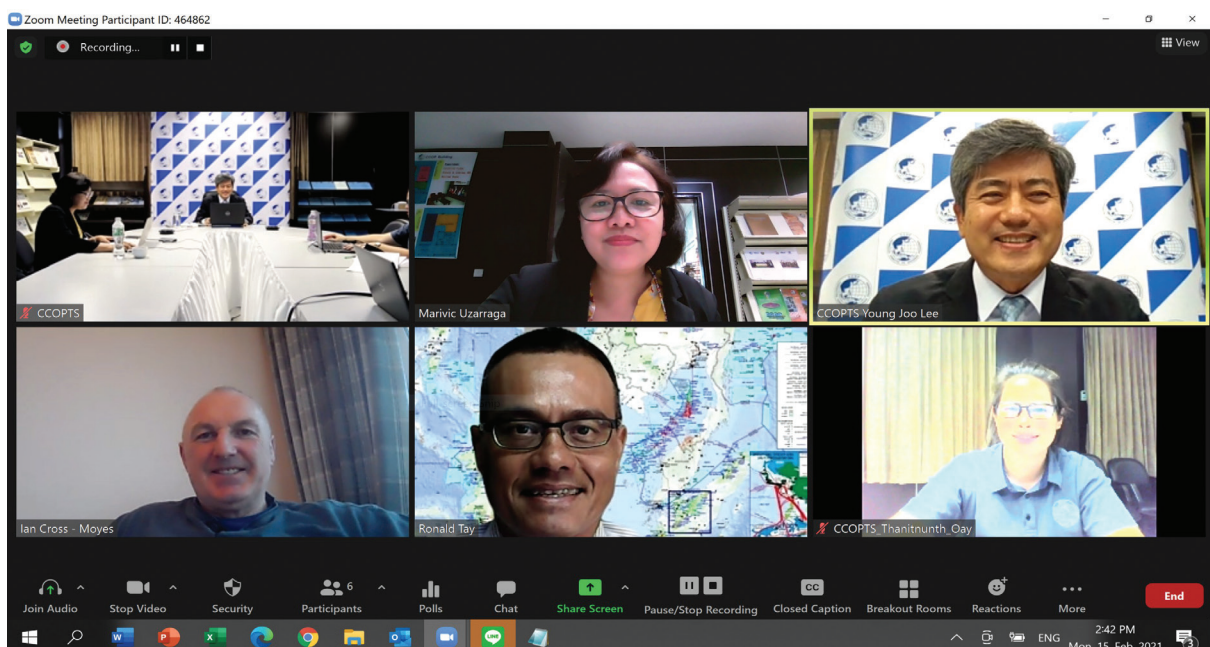
**Mr Ian Cross**, SEAPEX gave brief introduction of SEAPEX. SEAPEX has members around the world such as Australia, Mongolia, Malaysia,

Japan, Korea, Singapore, and UK (BGS). SEAPEX has membership, publication online (monthly newsletter) and very keen to support some scholarship and had education fund with ASEAN Countries such as Philippines University. SEAPEX has similar mission with CCOP that is promoting geoscience and is looking forward to collaborate with CCOP.

In summary, the following are potential activities for CCOP and SEAPEX collaboration:

1. SEAPEX scholarships to open to CCOP Member Countries
2. Swapping adverts and announcement is each other publications, and website
3. Providing speakers for each other's events
4. Complimentary entry for SEAPEX annual conferences, technical meetings, etc. CCOP to provide similar for an event that it may have.
5. Joint efforts in producing an iGeology app for East and Southeast Asia (CCOP Member Countries), using the published BGS iGeology app, <https://www.bgs.ac.uk/technologies/apps/igeology-app/>

**Dr Young Joo LEE** will inform and facilitate the CCOP Steering Committee's approval to formalize the CCOP-SEAPEX collaboration. In the meantime, collaborative activities mentioned in item 4 may proceed, if allowed by either organization while waiting for the CCOP-SEAPEX formal collaboration.



**Critical Minerals Forum (Asia and Oceania) - Geoscience to support critical mineral discovery**

On **26 February 2021**, the CCOP Technical Secretariat joined the online meeting on "**Advances in critical mineral research: A forum in memory of Victor Labson**", organized by the Geological Survey of Canada, Geoscience Australia and the United States Geological Survey. Presentations focused on advanced mineral system models that were applicable to

critical minerals and new methods for modelling mineral potential in buried, remote, and/or other challenging mineral exploration settings. There were a number of good presentations/speakers, as well as a very good panel discussion. **Dr Young Joo LEE**, Director of CCOPTS was invited as one of the panelists (CCOP, KIGAM, New Zealand, Queensland AU and India). Some of the keywords for further development include mineral systems, new exploration techniques, capacity buildings, re-evaluation of existing mineral/mining programmes.



## STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP

### OBJECTIVE 4: TO STRENGTHEN COOPERATION & PARTNERSHIP.

#### The Seventy-seventh Session of the Economic and Social Commission for Asia and the Pacific (ESCAP)

The seventy-seventh session of the Economic and Social Commission for Asia and the Pacific which was held from 26 to 29 April 2021, entirely online under the theme, “Building back better from crises through regional cooperation in Asia and the Pacific.”. Opening Session Link, <https://www.youtube.com/watch?v=UMDhVO6iBpQ&t=41s>. CCOP was invited to attend meeting online and request to prepare one consolidated information document which combines the highlights of achievements as a traditionally reporting to the Commission. CCOPTS has submitted the SUMMARY OF 2020 for UN-ESCAP 77<sup>th</sup> Session of the Commission: Promoting Economic, Social and Environmental Cooperation on Oceans for Sustainable Development to ESCAP. The consolidated information document will be discussed in the afternoon of Wednesday, 28 April and continue to morning of Thursday, 29 April 2021 under agenda item 4 “Review of the implementation of the 2030 Agenda for Sustainable Development in Asia and the Pacific and issues pertinent to the subsidiary structure of the Commission” for the Commission to take note of and subsequently reflect in its draft annual report. In detail, the reports of CCOP and MRC will be reflected under agenda item 4(f) Committee on Environment and Development; and the Typhoon Committee Secretariat and the Panel on Tropical Cyclones under agenda item 4(i) Committee on Disaster Risk Reduction.

#### The 1<sup>st</sup> Carbon Neutrality (Xi’an) International Forum

The 1<sup>st</sup> Carbon Neutrality (Xi’an) International Forum was jointly held by the Government of Shaanxi Province, Ministry of Ecology and Environment of PRC, and Asian Development Bank on 12 May 2020, 8:00 AM to 6:00 PM (Beijing Time). The goal is to move towards an international grand event for representatives from all sectors of society, to discuss climate

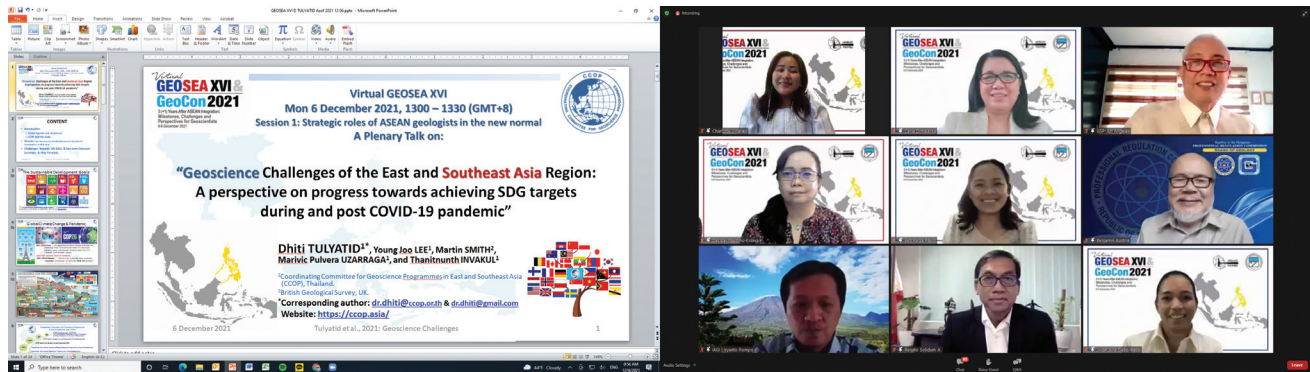
change mitigation, target of peaking carbon emissions before 2030 and reaching carbon neutrality in 2060, green low-carbon high-quality development. It is an important sub-forum of the 5<sup>th</sup> International Exposition of the Silk Road, which is one of most important international events of western China held by the national and provincial government. **Dr Young Joo LEE**, Director of CCOPTS was invited to be a speaker on title of “CCOP’s efforts towards Sustainable Earth & Carbon Neutrality” to the forum. The forum invited leaders of relevant national ministries and commissions, as well as important scientists, entrepreneurs, and institutional representatives in the fields of energy, resources, and environment at home and abroad to participate, to discuss the local and national plan of peaking carbon emissions, carbon neutrality, and promote the construction of open and shared science and technology facilities for achieving carbon neutrality in the Ordos Basin to the north of Shaanxi province, and contribute to the interconnection of carbon neutral technology exchanges along the Silk Road and the construction of a community of shared future for mankind.



**Virtual GEOSEA XVI / GeoCon 2021:  
5(+1) Years after ASEAN Integration:  
Milestones, Challenges  
and Perspectives for Geoscientists  
6-8 December 2021**

participated in this session. The abstract and the presentations are attached herewith.

In the Session on Country Reports: Strengthening the ASEAN Network, there were four presentations from four geoscientist



The GEOSEA XVI and GeoCon 2021 is a virtual scientific conference which was held online on 6-8 December 2021 with the theme: 5(+1) Years after ASEAN Integration: Milestones, Challenges and Perspectives for Geoscientists. This year’s convention provided a venue for geoscientists to share and discuss current perspectives and latest innovations from the various fields of the geosciences including energy and resources, geohazards and tectonics among others. In addition to geoscientists, policy makers, media practitioners, undergraduate and graduate students and other stakeholders also participated in the event.

**Dr Dhiti Tulyatid**, Regional Expert, CCOPTS, joined the meeting and was a Plenary Speaker for Session 1: Strategic roles of ASEAN geologists in the new normal. **Dr Dhiti’s** presentation’s title is “Geoscience challenges of the East and Southeast Asia region: A perspective towards achieving SDG targets during and post COVID-19 pandemic”. His co-authors are: **Dr Young Joo LEE**, Director of CCOPTS, **Dr Martin Smith**, Former Representative of UK to CCOP, Deputy Chief Editor to CCOP and Honorary Research Associated, BGS; **Ms Marivic Pulvera Uzarraga**, Manager, Project Operation & Information; and **Ms Thanitnunth Invakul**, Assistant, Project Information and Operation, CCOPTS. **Dr Dhiti** gave his talk on 6 December 2021 at 12:00 – 12:30 (Bangkok Time). There were approximately 200 participants

organisations: the Geological Society of the Philippines (**Decibel Faustino-Eslava**, President); Institute of Geology Malaysia (**Abd Rasid Jaapar**, President); the Geological Society of Thailand (**Dr Sommai Techawan**, President); and the Association of Indonesian Geologists (IAGI) (**Muhammad Burhannudinur**, President).

There were also a total of 15 technical parallel sessions with a total of almost 200 presentations of both oral and poster presentations presented during the 3-day conference. This has been one of the most successful virtual international geoscience conferences of the year in the region.

CCOP has been very well recognized with a very good image among participants from the region.

**11<sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition**  
**Online Forum of Directors General of China-ASEAN Geosciences Departments**

On **20 May 2021**, 14:00-16:00 (Beijing Time), online (Video Conference) and onsite the 11th China-ASEAN Mining Cooperation Forum & Exhibition & Forum of Directors General of China-ASEAN Geosciences Departments was organized by CGS at the Howard Johnson CAEXPO Plaza Nanning, China. The theme of this forum is ‘Jointly Promote the Sustainable Development of Geosciences for China-ASEAN Member States’. **Dr LI Pengde**, Member of the Standing Committee of the National Committee of the Chinese People’s Political Consultative Conference (CPPCC) and Vice President of CGS as a Chairperson of the forum, kindly gave welcome speech. CCOPTS Director **Dr Young Joo LEE** was invited to attend the forum as an observer and briefly gave introduction of CCOP and related activity during opening ceremony. There are 90 delegates from the ASEAN member states and China, represented by:

- Public Works Department (PWD), Ministry of Development, Brunei

- General Department of Mineral Resources (GDMR) of the Ministry of Mines and Energy, Cambodia
- China Geological Survey (CGS) of the Ministry of Natural Resources, China
- Center for Mineral, Coal and Geothermal Resources, Geological Survey (GA) of the Ministry of Energy and Mineral Resources, Indonesia
- Department of Geology and Minerals (DGM) of the Ministry of Energy and Mines, Lao PDR
- Department of Mineral and Geoscience Malaysia (JMG) of the Ministry of Energy and Natural Resources, Malaysia
- Department of Geological Survey and Mineral Exploration (DGSE), Ministry of Natural Resources and Environmental Conservation, Myanmar
- Mines and Geosciences Bureau (MGB) of the Department of Environment and Natural Resources, Philippines
- Department of Mineral Resources (DMR) of the Ministry of Natural Resources and Environment, Thailand
- General Department of Geology and Minerals of Vietnam (GDGMV) of the Ministry of Natural Resources and Environment, Vietnam



This forum has achieved the following consensuses:

1. All sides are dedicated to enhance geosciences cooperation under the RCEP framework, which is closely connected to SDGs2030 UN plan, to address issues on ecological environment, climate change, safety of water resources and other international concerns regarding harmony between human and nature.
2. All sides agree to focus on key geosciences issues such as tectonic evolution and related

ecological environment of the Eastern Tethys in Southeast Asia, clean energy and water, prevention and mitigation of geological hazards, etc. All sides believe joint efforts on innovation of technology and equipment, and extensive sharing of management experience are essential to geosciences cooperation and regional sustainable development.

3. All sides are willing to accelerate the construction of the China-ASEAN Geosciences Cooperation Center through GIS cooperation, information sharing,

capacity building, academic exchange and degree programs, etc.

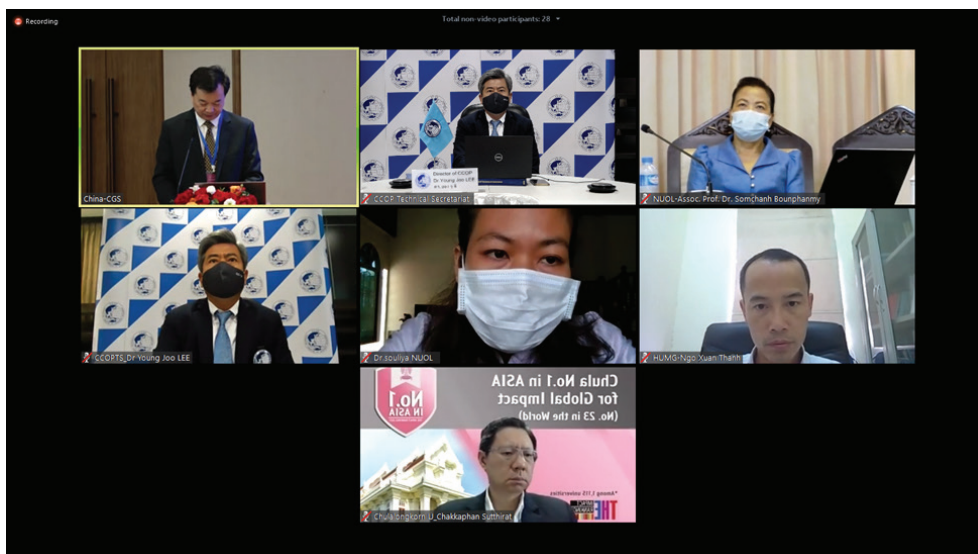
The Minutes of Meeting is adopted after wording revisions and signed by representatives from the ASEAN member states, China and CCOP as observer.

### Forum of Presidents of China-ASEAN Geosciences Universities

During the 11<sup>th</sup> CAMCF, on 21 May 2020, 9:00-12:00 (Beijing Time), online “Forum of Presidents of China-ASEAN Geosciences Universities” hosted by CGS and co-organized by International Mining Research Center, China Geological Survey; Chengdu Center, China Geological Survey; China-ASEAN Geosciences Cooperation Center. The theme of this forum

is Strengthening Cooperation Between China and Universities in the ASEAN Region on Geosciences and Joint Research on Tethyan Geoscience. Attended by 12 representatives from University and Geoscience Institute in the ASEAN member states and China.

At opening, **Mr TANG Shanmao**, Co-Rector, China-ASEAN College, kindly gave welcome speech. **Prof LI Wenchang**, Co-Rector has sharing discussion on the topic of Academic Exchange on Major Geoscientific Issues in Southeast Asia with representatives from University and Geoscience Institute in the ASEAN member states. CCOPTS Director **Dr Young Joo LEE** was invited to attend the forum and gave presentation on “CCOP’s efforts for collaborating Geoscience University”.



**STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP**

**OBJECTIVE 5: TO PROMOTE THE ESTABLISHMENT OF THE EXPERT GROUPS.**

**The Research Center of Urban Geology (RCUG) and Euro-Asia Network of Urban Geology (EANUG) Meeting**

On **26 January 2021**, 16:00 – 18:00 (Beijing Time), The Research Center of Urban Geology (RCUG) and Euro-Asia Network of Urban Geology (EANUG) online Meeting via Zoom Application hosted by China Geological Survey (CGS). Participated by representatives from China Geological Survey (CGS), British Geological Survey (BGS), Geological Survey of Finland (GTK), Geological Survey of Japan (GSJ), Korea Institute of Geoscience and Mineral Resources (KIGAM) and CCOP Technical Secretariat. The aim of the meeting is to further discuss the establishment of CCOP Research Center of Urban Geology (CCOP-RCUG). The participants agreed that:

1. CCOP-RCUG is to be established as a research center affiliated to CCOP.
2. CCOP will cooperate with CGS to set up CCOP-RCUG. The secretariat is to be hosted by Nanjing Center of CGS.
3. The steering committee (SC) of CCOP-RCUG will be formed by representatives from the five member countries (China, Finland, Japan, Republic of Korea, and United Kingdom) of EANUG at the initial stage, plus a representative from CCOP. Other member countries and cooperating countries of CCOP may upon application become members of the SC and expert team of CCOP-RCUG.
4. CGS as the initiating unit of CCOP-RCUG will be responsible for the coordination of personnel training, technical exchange, project application and implementation, etc. Nanjing Center of CGS will provide offices and personnel to support the operation of the secretariat.



**STRATEGIC AIM I: PROVISION OF GEOSCIENCE SOLUTIONS, ADVICE AND RELIABLE INFORMATION THROUGH COOPERATION AND PARTNERSHIP**

**OBJECTIVE 5: TO PROMOTE THE ESTABLISHMENT OF THE EXPERT GROUPS.**

**MoU Signing Ceremony between CCOP and CGS on the Establishment of CCOP Research Centre on Urban Geology (CCOP – RCUG) and a Technical Workshop of CCOP – RCUG**

**Thursday 27 May 2021, 13:15 – 16:30 (Bangkok Time)**

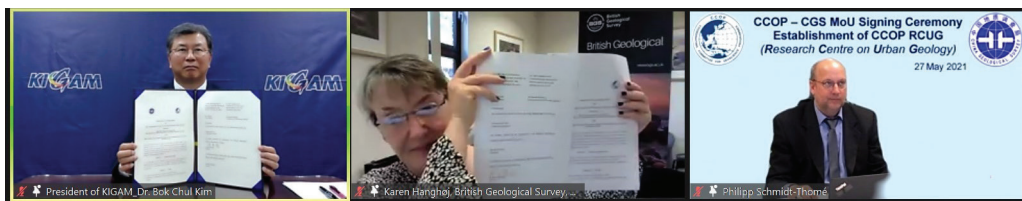
On **Thursday 27 May 2021** the Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) and the China Geological Survey (CGS), Ministry of Natural Resources of the People’s Republic of China held an online MoU Signing Ceremony on the establishment of the CCOP – RCUG.

During the Opening Session, **Dr Young Joo LEE**, Director of CCOP Technical Secretariat gave a report on the background of the MoU signing ceremony. **Dr Sommai TECHAWAN**, Chairperson of the CCOP Steering Committee,

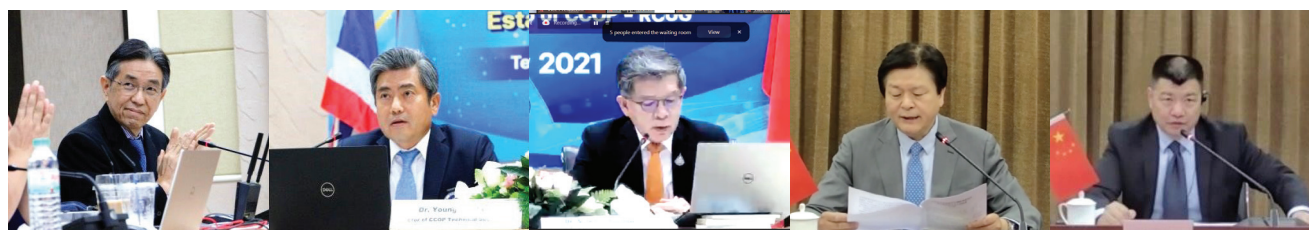
Permanent Representative of Thailand to CCOP and Director General of the Royal Thai Department of Mineral Resources, and **Dr Li Pengde**, Member of the Standing Committee of the National Committee of the Chinese People’s Political Consultative Conference (CPPCC) and Vice President of CGS, kindly gave Welcome Addresses. Three honourable delegates: **Dr Bok Chul KIM**, Permanent Representative of Korea to CCOP and President of the Korea Institute of Geoscience and Mineral Resources (KIGAM); **Dr Karen HANGHOJ**, BGS Director; and **Dr Philipp SCHMIDT-THOMÉ**, Representative of Finland to CCOP, International Operation Director, Geological Survey of Finland (GTK), delivered addresses to the meeting. **Dr Sommai Techawan** and **Dr Li Pengde** signed the MoU for CCOP and CGS, respectively. Representatives of KIGAM, BGS and GTK signed the MoU as witnesses.



**Dr Sommai Techawan (left) and Dr Li Pengde (right) showed the signed MoU.**



**Dr Bok Chul Kim of KIGAM (left); Dr Karen Hanghoj of BGS (middle) and Dr Philippe Schmidt-Thomé of GTK (right) as honourable guests and witnesses in the ceremony.**



**(As order of photographs): Dr Dhiti Tulyatid; Dr Young Joo Lee, Dr Sommai Techawan; Dr Li Pengde & Mr Ma Yongzhen.**

During the Ceremony, **Dr Dhiti TULYATID**, Regional Expert; and **Ms Marivic UZARRAGA**, Programme Manager and IT, CCOPTS, hosted the ceremony. There were about 40 people from China, Korea, Finland, the UK, Thailand and the TS participated in the MoU Signing Ceremony.

After the MoU signing ceremony, **Mr MA Yongzheng** Deputy Director General of Department of Science & Technology and International Cooperation, CGS, hosted the meeting and the CCOP-RCUG Workshop on Urban Geology. **Dr GAO Yanguang**, Director General of Nanjing Centre, CGS, gave a presentation on the Introduction of Nanjing Center, CGS, Secretariat of CCOP – RCUG. During the CCOP – RCUG Workshop, there were five presentations given:

- **Dr Dhiti TULYATID** (CCOPTS): Roles of CCOP on Urban Geology in E & SE Asia Region;

- **Dr XING Lixia** (CGS): Progress of Urban Geology in China;
- **Dr Philipp SCHMIDT-THOMÉ** (GTK): Smart cities: integration of geology into modern urban planning;
- **Dr Tsutomu NAKAZAWA** (GSJ): 3-D Geological map of Central Tokyo;
- **Dr Ho-Rim KIM** (KIGAM): Research Status and Plan for Urban Geology of KIGAM – ‘A Big Step for Resilient and Sustainable Cities’; and
- **Dr Martin SMITH** (BGS): Urban geology in BGS: a summary of activities and future opportunities.

There were about 70 people from Cambodia, China, Japan, Korea, Malaysia, Myanmar, the Philippines, Thailand, Finland, the UK and the CCOPTS, participated the CCOP – RCUG Workshop.



The CCOP–RCUG operates through collaboration among its founding members. CGS leads the CCOP-RCUG Secretariat Office located at its Nanjing Centre. CCOP-RCUG will carry out urban geological researches around

the world, promote the sustainable development of cities and human settlements, and provide services for the construction of communities with a shared future for mankind and the realization of the UN 2030 SDG.



**The 2<sup>nd</sup> Online CCOP- KIGAM Urban Geology International Seminar**

On **10 November 2021**, 14:00 – 18:35 (Bangkok Time), the 2<sup>nd</sup> online CCOP-KIGAM Urban Geology International Seminar was successfully held online. There were 53 participants from

Member Countries [Brunei Darussalam (3), Cambodia (3), China (7), Indonesia (3), Japan (5), Korea (2), Malaysia (2), Mongolia (2), Myanmar (3), Philippines (6), Singapore (1), Thailand (6), Vietnam (3-absent); BGS, UK (2); and CCOP Technical Secretariat (8)] participated in the meeting.



A group photograph of participants attending the meeting.

**OPENING CEREMONY:**



**Dr Young Joo LEE**, Director of CCOPTS and **Dr Wook-Hyun Nahm**, Principal Researcher, KIGAM kindly delivered the Welcome and Opening Address.

## Agenda 1. Review and Progress on CCOP – KIGAM Urban Geology Project

Dr Dhiti Tulyatid gave a presentation on the Progress report on CCOP-KIGAM Urban Geology Project. He informed the meeting about the project's background, and the targets for 2021 that include: setting up of a technical cooperative network; organizing an international seminar and a summary report on urban geology, a regional and global perspective. MCs have nominated a total of 35 experts from 11 countries to be the CCOP Expert Group for urban geology (Brunei Darussalam (4); China (3); Indonesia (3); Japan (3); Korea (1); Malaysia (3); Mongolia (3);

Myanmar (3); Philippines (4); Thailand (5); and Vietnam (3). CCOPTS has worked with BGS on the Questionnaire survey and the compilation of report on urban geology on regional and global perspectives. The Questionnaire Survey aims to cover 5 aspects: National & organization priorities; Organisation structures and remits; Geological data & information (3-D); Outreach & engagement for societal impact; and Future development. A total of 10 MCs have completed the surveys. Marcus Dobbs would report the preliminary findings later in this meeting. Ten MCs also submit their summary country reports on urban geology. There would be about 50+ participants attending this meeting.

## Agenda 2. MCs Summary Country Reports:

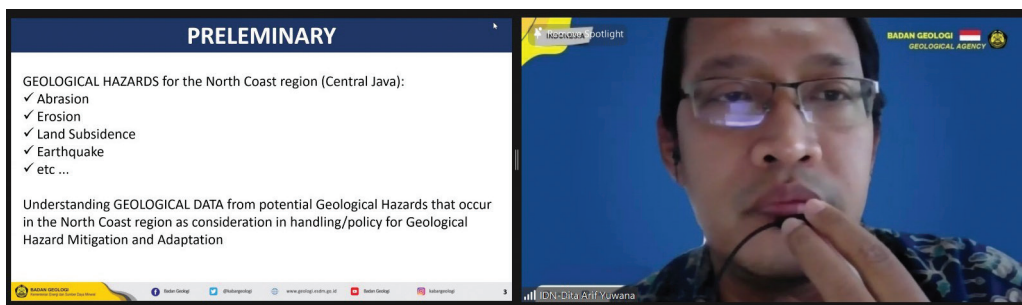


2.1 Brunei Darussalam: Afiq Alam bin Jaya, Geologist, Public Works Department, gave a presentation. Urban Geology in Brunei Darussalam





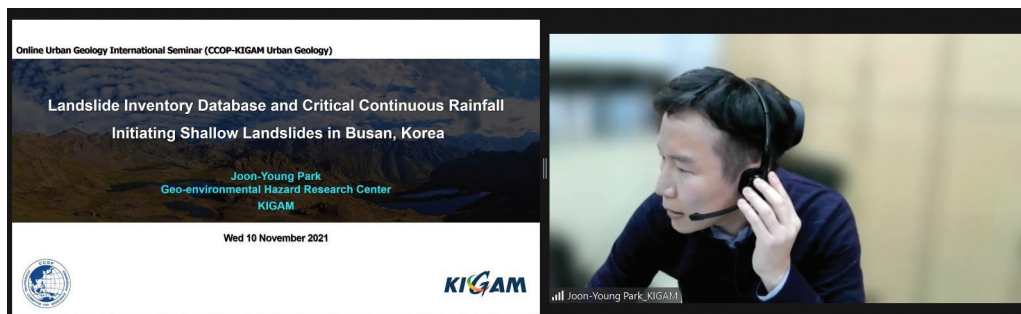
**2.2. China: Jingwen Su**, Deputy Director, Urban Geology Div of Nanjing Centre (co-authors: Ge Weiya & Xing Weiguo), gave a presentation on China Urban Geological Research Report.



**2.3. Indonesia: Mr Dita Arif Yuwana**, Sub-coordinator Geological Conservation, Centre for GW and Geol Env, Geological Agency, gave a report on ‘Monitoring Land Subsidence in the North Coast of Java: Case study Pekalongan City and Surrounding’.



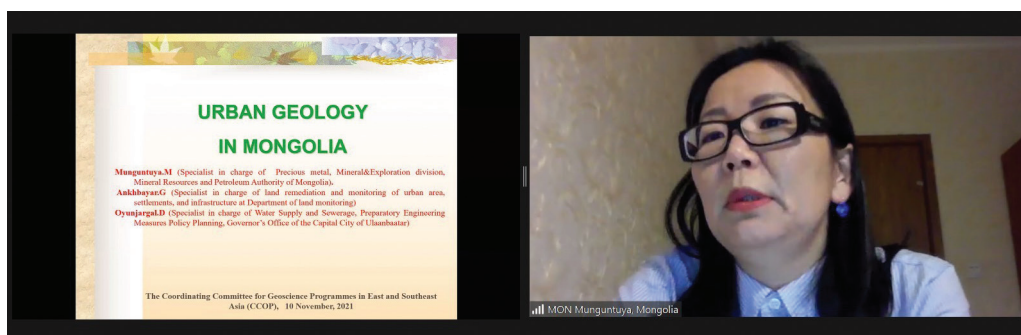
**2.4. Japan: Dr Yoshinori MIYACHI**, Deputy Director, GSJ, AIST, gave a presentation on ‘Urban geological research in Japan’ (co-authors: T. Nakazawa, S. Nonogaki, and M. Makino).



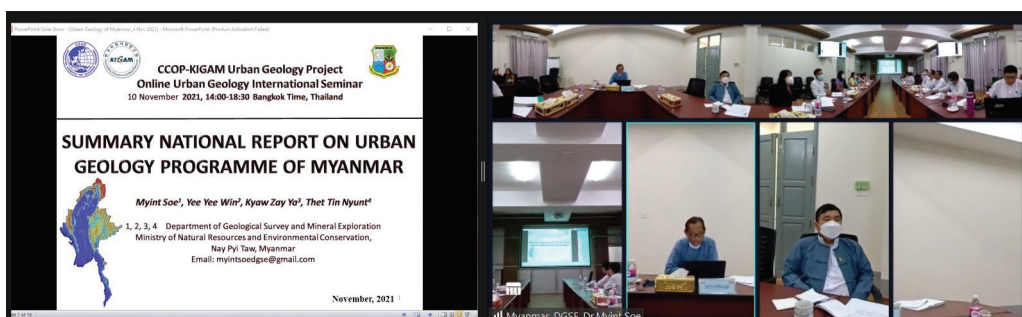
**2.5. Korea: Dr Joon-Young PARK**, Senior Researcher, Geo-Environmental Hazard Research Center, KIGAM, gave a presentation on ‘Landslide Inventory Database and Critical Continuous Rainfall Initiating Shallow Landslides in Busan, Korea’.



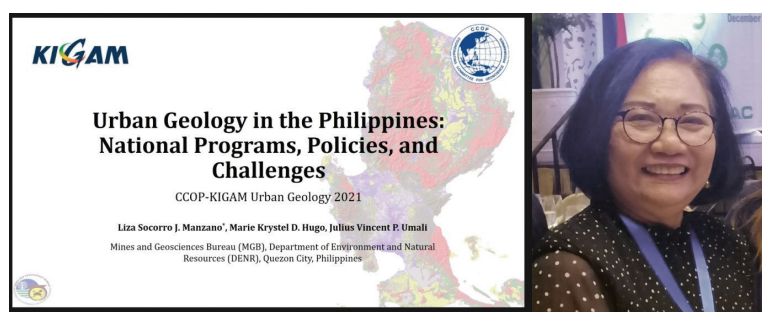
**2.6. Malaysia: Mr Qalam A'Zad Rosle**, Principal Assistant Director, JMG, gave a presentation on ‘Urban Geological Survey and its Application, Malaysia’s Experience’.



**2.7. Mongolia: Mrs Munguntuya Mandshir**, Geologist, Mineral Research Department, Mineral Resource and Petroleum Authority of Mongolia, gave a presentation on ‘Urban Geology in Mongolia’ (co-authors: G. Ankhbayar, and D. Oyunjargal).



**2.8 Myanmar:** Dr Myint Soe, Deputy Director-General of the Department Geological Survey and Mineral Exploration (DGSE) (co-authors: YY Win, KZ Ya and TT Nyunt) gave a presentation on ‘Urban Geology Programme of Myanmar’.



**2.9 Philippines:** Ms Liza Socorro J. Manzano, Chief, Geohazard and Engineering Geology Section, MGB, (co-authors: Marie Krystel D. Hugo and Julius Vincent P. Umali) gave a presentation on ‘Urban Geology in the Philippines: National Programmes, Policies and Challenges’.



**2.10 Thailand:** Dr Mallika Nillorm Senior Geologist, Department of Mineral Resources, gave a country report on urban geology.

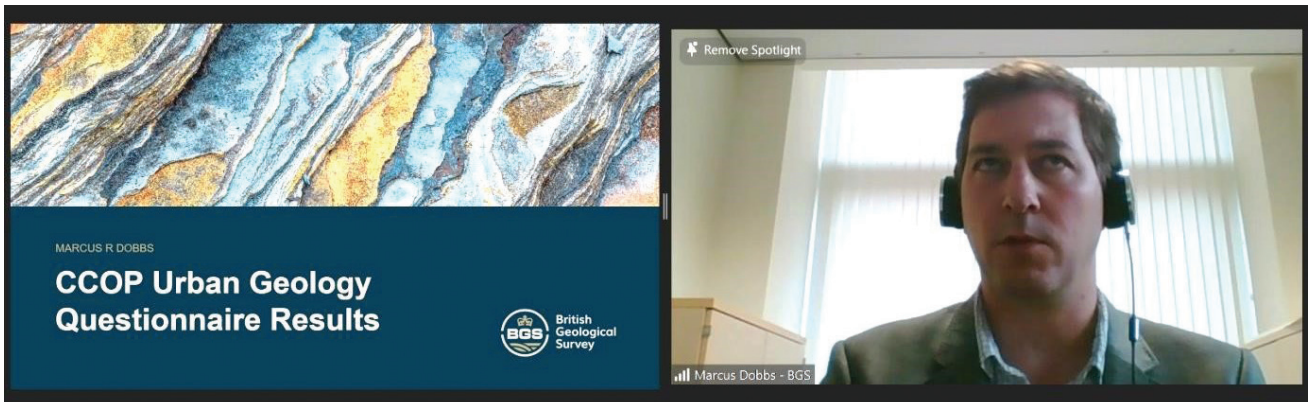
**2.11 Vietnam:** Vietnam participants are absent from the meeting. However, Vietnam has submitted its summary country report to CCOPTS.

### Agenda 3. Summary Report of Urban Geology Questionnaire Survey.

**Mr Marcus R. Dobbs**, Senior Engineering Geologist, BGS, summarized the result of the 'CCOP Urban Geology Questionnaire Survey Results'. There were 20 responses from 10 MCs. The majority of the responses come from national geological surveys (70%) and academic institution (20%).

**In summary**, there are significant variation in the response but also many common themes.

Organisations have different remits, functions and responsibilities. Technology, skills and knowledge base of different organisations are very variable. Resilience to geohazards is a focus for most organisations. Future priorities include: subsurface properties data (Geotech & hydro); geohazard maps; geological model. The organizational development priorities are data collection and management. Most MCs would like to enhance capacity and capability through training, knowledge exchange and collaborative research towards the best practice.



### Agenda 4. A Global Perspective on Urban Geology

**Dr Martin Smith**, Former Representative of UK to CCOP, Deputy Chief Editor to CCOP, and Honorary Research Associate, BGS, presented the proposed outline of BGS review and recommendations on urban geology for CCOP-KIGAM report. The report title '(Development in) Urban Geology in Europe and Southeast Asia: (the role of geological survey).

The content of the report:

1. Introduction
2. Urban geology – current state of the science: concept and global statement & update on key review papers. Key approaches include: City typologies toward research focus; data capture, integration & manipulation; and

development of modelling skills for a virtual city simulation.

3. Global review and role of geological surveys: UK & Europe: UGEG; E&SE Asia: CCOP & RCUG; Partnership and Networks.
4. Survey and analysis of E&SE Asia countries: MCs data, priorities, statistics & interpretation, digital readiness, etc.
5. Future thoughts and direction: promoting an urban geology expert group with priorities on climate change and hazards; communications.
6. References & resource materials.

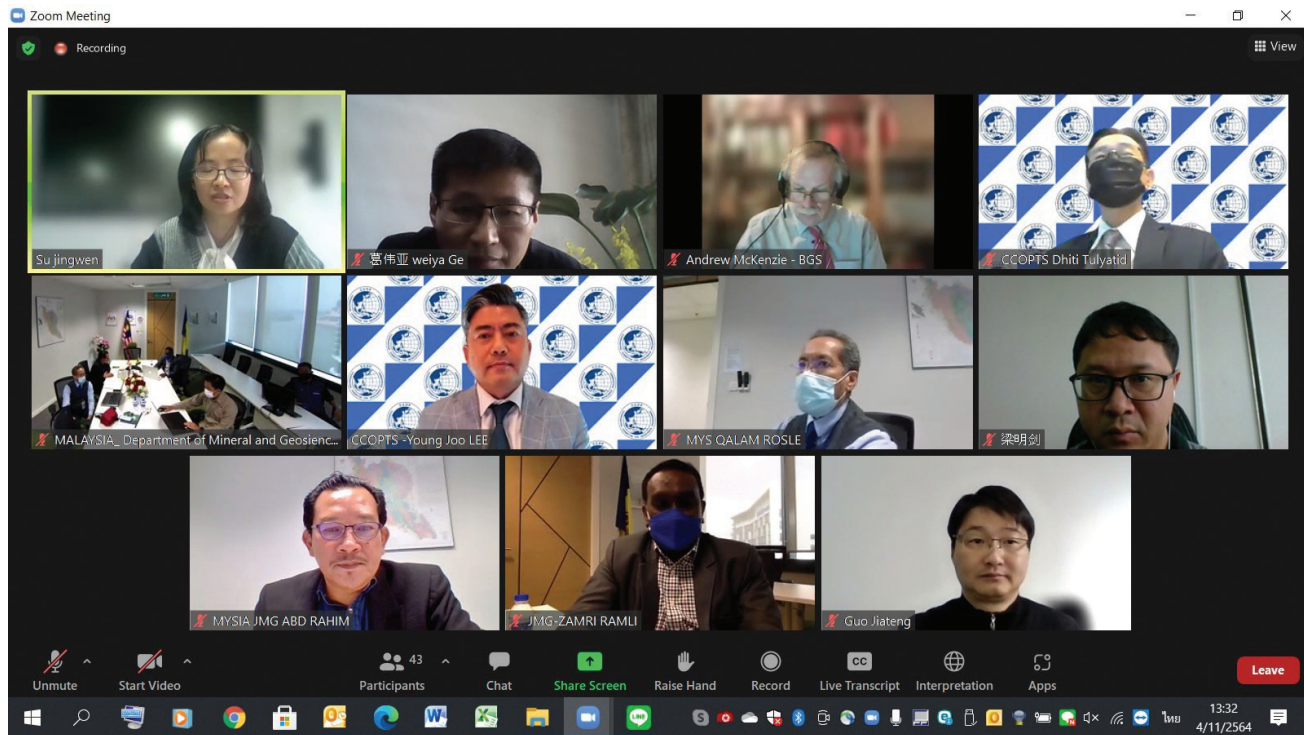
The meeting acknowledged and will inform CCOPTS if there any comments about the proposed content. Closing: **Dr Young Joo LEE** delivered a brief closing remark.

**ONLINE INTERNATIONAL SYMPOSIUM OF RESILIENT CITY & THE 21<sup>ST</sup> ANNUAL GENERAL MEETING OF UK-CARE AGENDA.**

**Disaster Prevention and Safe Operation and Maintenance of Urban Geology.**

The meeting is a part of the WYSS2021 Meeting and was held online on 4 November 2021,

13:3.-17:30. The session focuses on urban geological history, urban geological survey, urban geological monitoring, urban geological evaluation, urban geological zoning and urban geological smart service. CCOP-RCUG co-hosted this meeting. CCOPTS help to cooperate among related MCs and CCs to have their experts deliver presentations at the meeting.



**Dr Young Joo LEE**, Director of CCOPTS gave a keynote presentation on “Activities for safe and sustainable urban environments in the CCOP Region. Other speakers include **Dr Philipp Schmidt-Thome** (GTK) Representative of Finland to CCOP, talked about the “Integrating Geology and Climate Change Adaptation into Urban Planing”; **Hisamuddin Termidi** (JMG, Malaysia); and **Andrew McKenzie** (BGS, UK) on “The value of urban geology experience from the UK, Europe and South East Asia.



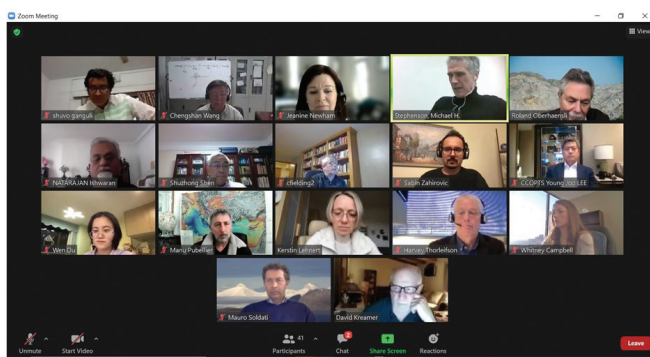
# AIM II: Adapting to Digital Transformation in Geoscience for Future Earth

**Strategic Aim II: Adapting to Digital Transformation in Geoscience for Future Earth**  
**OBJECTIVE 1: TO UTILIZE THE LATEST TECHNOLOGY TO DEVELOP DIGITAL CULTURE AND CAPABILITY**  
**OBJECTIVE 2: TO DIGITALLY TRANSFORM GEOSCIENCE DATA MANAGEMENT**  
**OBJECTIVE 3: TO DEVELOP CLOUD TECHNOLOGY FOR INTEROPERABLE GEOSCIENCE DATA CONSOLIDATION**

## Deep-Time Digital Earth (DDE)

### DDE 2<sup>nd</sup> Working and Task Group Workshop

On **5 May 2021**, 14:00 – 18:00, CET, the 2<sup>nd</sup> Working and Task Group Workshop was organized online via Zoom Application, attended by all WTGs and committee members. The purpose for this workshop is designed to understand and act on WTG members concerns, as guided by feedback so far received. Meeting will also consist of updates on DDE matters, presentations on the science/data aims of DDE, and breakout groups. **Dr Young Joo LEE**, Director of CCOPTS was attended as Co-chairman of SE Asia Working Group (SEA-WG) and gave presentation on “Introduction of Southeast Asia Task Group (SEA-TG06)” which included introduction of SEAWG (CCOP & group at Sun Yat-sen Univ.), plans for 2021 and beyond, expected outcome & output, and way forward.



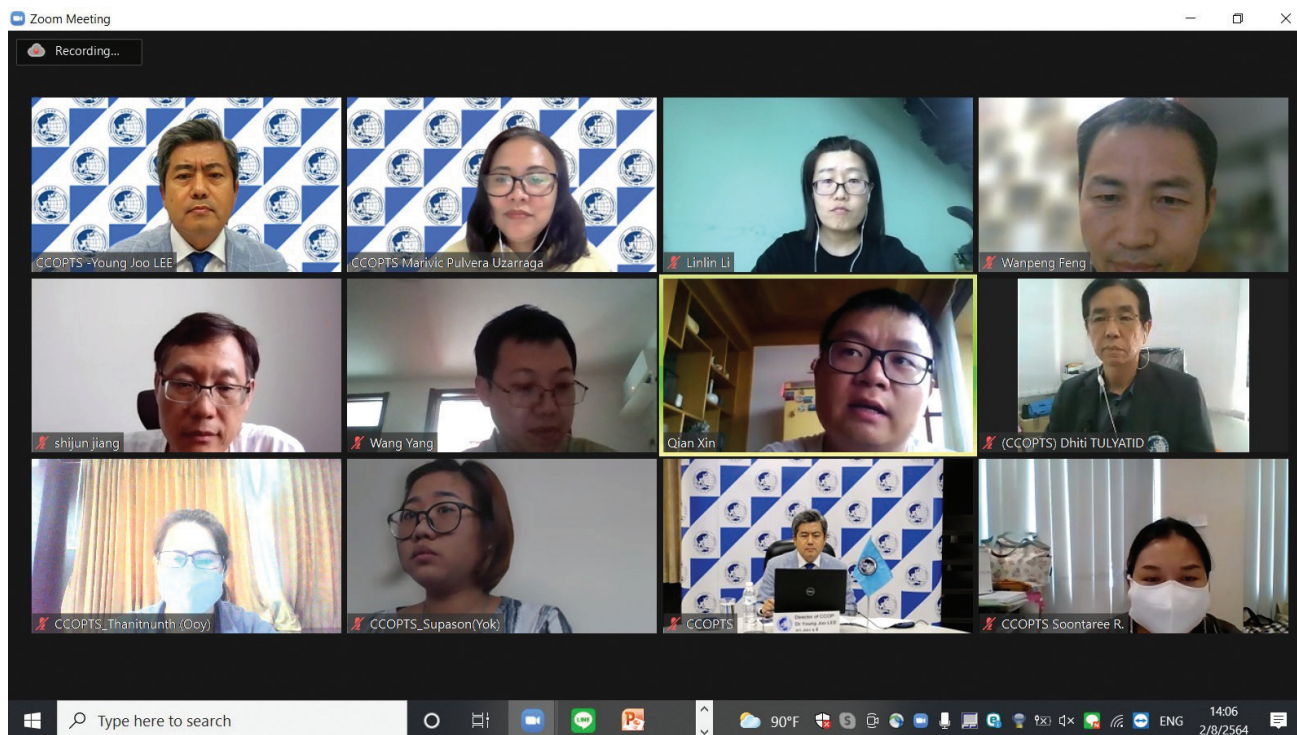
### DDE SEA-TG on DDE Project Meeting (CCOP & Sun Yat-sen University)

On **2 August 2021**, 14:00 PM Bangkok time, the online DDE Project meeting on DEE SEA-Task Group between CCOP and Sun Yat-sen University was organized via Zoom Application, attended by DDE task group from Sun Yat-Sen University and CCOPTS team. The purpose for this meeting is to discuss plan further collaboration for 2021 schedule to co-organize workshop that related to the DDE SEA within CCOP region.

**Dr Young Joo LEE** made a presentation about CCOP and its data compilation activities relevant to DDE, including DDE SEA-TG’s tentative plan for 2021.

**Dr Linlin Li** presented her proposal on expanding and updating her work on building an integrated platform for marine geohazard assessment for SEA-TG. This would entail building up databases on historical earthquakes and tsunami events in SEA and on typical submarine landslides and their hazard potential.

**Dr Wanpeng Feng** presented his research interests on Development of InSAR deformation mapping techniques and modeling earthquake processes. This would require data on seismicity in the region, high-precision fault map, local strain detection, and water level changes.



**Prof Shijun Jiang** presented his research on “Evolution of SE Asian marginal seas and its impacts on global climate”. The focus would be on critical geological events (extinction, PETM, OAE, E-O), Geography heterogeneity, Eco-environmental extremity during the event and Habitability change pre- and post-event.

On behalf of DDE SEA-TG Co-Chairman **Prof Yuejun Wang**, **Dr Yang Wang** informed the three core scientific issues that SYSU will tackle under SEA-TG, as follows:

1. Tectonic evolution of the Southeast Asia / South China Sea and its margins
2. Crustal deformation and geological hazards along subduction zones
3. Evolution of SE Asian marginal seas and its impacts on global climate.

On the tectonic evolution (issue 1), the studies to work on would answer the following key questions:

- What suture zone represents the closure boundary
- When did closure occur?
- What are the processes of assembly of these continental fragments?

It was agreed that the DDE SEA-TG will organize at least one workshop or seminar this year, either in October or November, and focus on one of the 3 core scientific issues identified above.

The meeting agreed that SYSU will prioritize **what the focused topics of interest are**; and **what data types and methodology** will be required. The information will lead to **who (national experts) from CCOP MCs** will be involved in future activities. The information will help CCOP and SYSU to start the upcoming workshop.

## Online Meeting DDE-CCOP collaboration on IPTC

On **28 September 2021**, 18:00 – 19:00, Bangkok Time, the online meeting DDE-CCOP collaboration was organized online via Zoom Application, attended by DDE and CCOPTS team. The purpose for this meeting is to discuss for the Organization of ICTP Conference in Bangkok, February 2023. **Dr Young Joo LEE**, Director CCOPTS gave brief introduction of CCOP Activity on cooperation and potential collaboration with DDE.

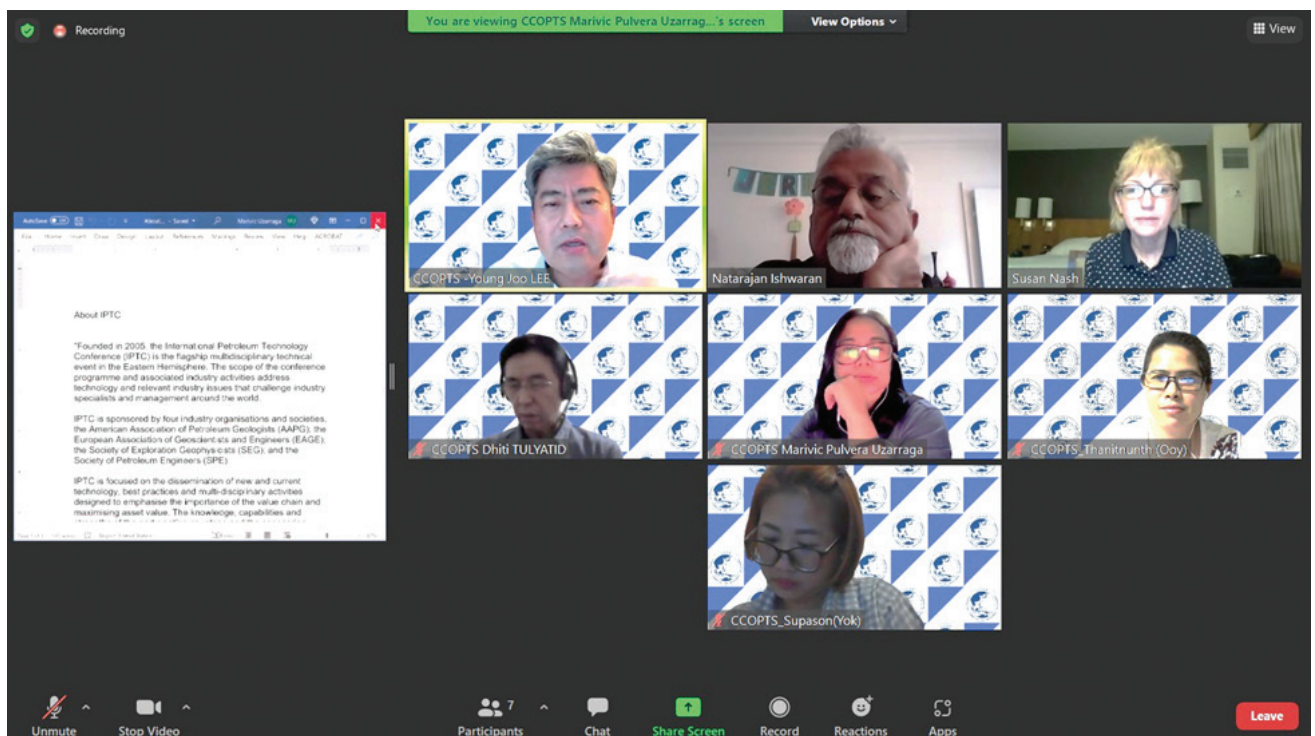
CCOP-DDE Cooperation for the Organization of the International Petroleum Technology Conference (IPTC) in Bangkok, February 2023. The IPTC Conference is regular conference which is sponsored by four industry organisations and societies, the American Association of Petroleum Geologists (AAPG); the European Association of Geoscientists and Engineers (EAGE); the Society of Exploration Geophysicists (SEG); and the Society of Petroleum Engineers (SPE), and participants have to register and pay registered fee.

Important points to discuss are:

- Meeting proposed topic 'CCUS in Southeast Asia Region' as one special session during the ICTP conference in Bangkok scheduled in February 2021. Invite presenter 7-8 people (15 minutes each). Meeting nominated **Dr Young Joo LEE** and **Dr Susan Nash** as co-chairpersons of session. CCOP will draft a concept of session and share to all for comment.
- Meeting proposed **Dr Young Joo LEE**, Director CCOPTS and **Dr David Leary**, Co-leader of Petroleum Geology Working Group to be the DDE representative in the IPTC Technical Committee. **Dr Susan Nash** will e-mail and confirm with **Dr David Leary** on this matter.
- For further collaboration between DDE-CCOP, **Mr Natarajan Ishwaran** will figure out more detailed items in the near future.

Meeting agreed to find the opportunity in future where DDE-CCOP could collaborate during 2021-2025 that related to CCOP Strategic Plan 2021-2015.

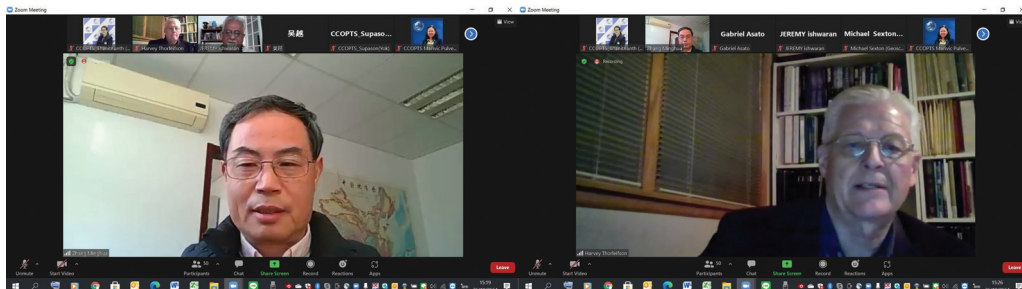
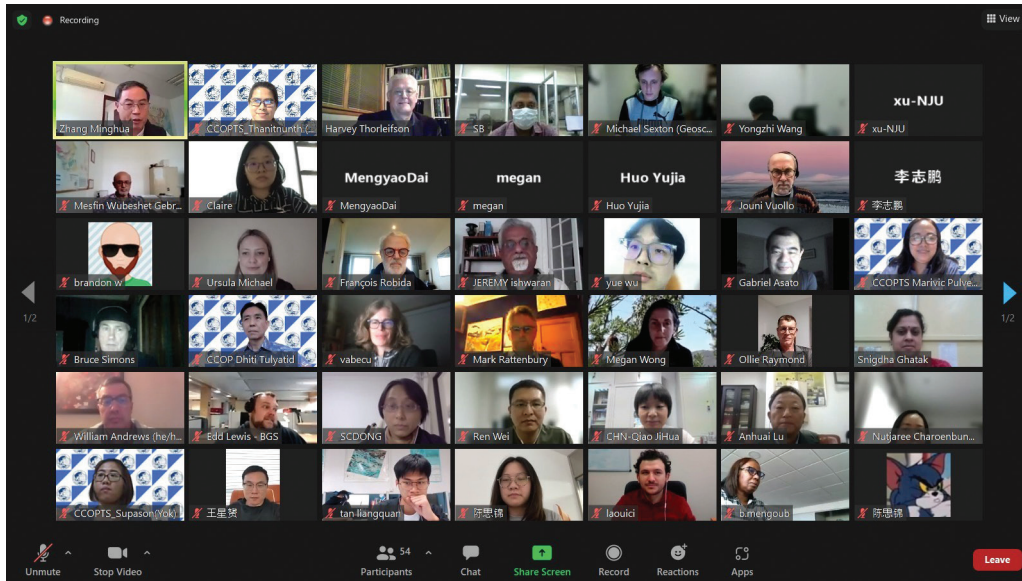
The meeting was adjourned by 19:10 Bangkok time.



## Online Geoscience Standards Training for DDE

The Online Geoscience Standards Training for DDE was held online on 26-28 October 2021. This was hosted by China Geological Survey (CGS). There were about 150 participants from DDE task groups and CCOPTS. Session Chair: by **Prof Zhang Minghua**, CGS and DDE Standard Task Group. Opening Ceremony:

Addresses from **Prof Jennifer McKinley**, DDE GC, DDE-STG and **Prof Harvey Thorleifson**, Director, Minnesota Geological Survey, USA & Chair Commission for the Management and Application of Geoscience Information (CGI), and from **Dr Alena Rybkina**, CODATA. Closing speech/remarks from DDE-STG by **Prof Harvey Thorleifson** and DDE-EC by **Prof Natarajan Ishwaran**.



- Introduction to CGI and its main partners on geoscience standards by **Harvey Thorleifson**
- Introduction to CGI and OGC standards by **Francois ROBIDA** and **Mickael Beauflis**
- Geoscience terminology by **Mark Rattenbury**
- Geoscience ontology by **Boyan Brodaric** and **Steve Richard**
- GeoSciML: Geology data model and exchange standard by **Oliver Raymond**
- EarthResourceML: Mineral resource and mining data model and exchange standard by **Michael Sexton**
- DDE metadata standard draft by **Zhang Minghua**, **Liu Rongmei** and **Wang Yongzhi**
- Metadata standard and practice by **James Passmore** and **Tim Duffy**
- OneGeology data and standard technology by **Edward Lewis** and **James Passmore**
- CODATA FAIR data principles and GOFAIR practice by **Alena Rybkina**
- A vision on DDE data science with FAIR data by **Ma Xiaogang**

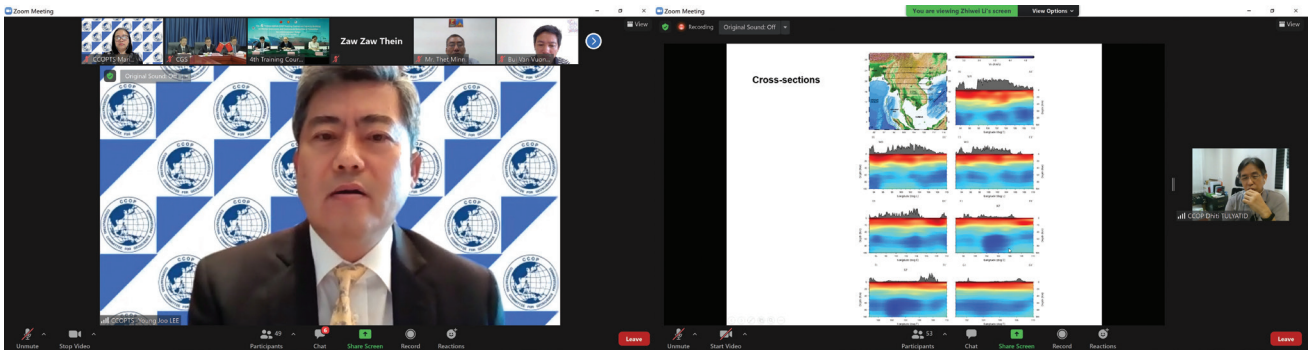
**The 4<sup>th</sup> China-ASEAN-CCOP training courses on capacity building on marine geoscience and geohazards reduction & prevention for ASEAN member states**

On **29-30 June 2021**, the 4<sup>th</sup> China-ASEAN-CCOP training courses on capacity building on marine geoscience and geohazards reduction

& prevention for ASEAN member states was organized online by China Geological Survey, Ministry of Natural Resources, P.R. China together with Guangzhou Marine Geological Survey, China Geological Survey, Qingdao Institute of marine geology, China Geological Survey and CCOP.



Opening ceremony



**Dr Young Joo LEE**, CCOPTS Director gave speech during opening ceremony

**Dr Dhiti Tulyatid**, CCOPTS Expert attend and shared content to the meeting

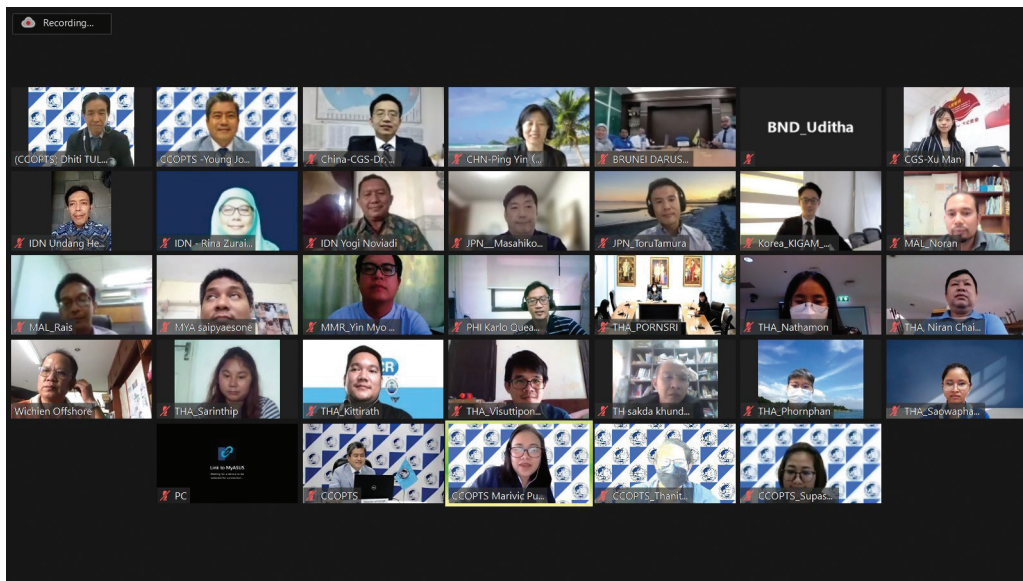


An Introduction to The Project 'The CHINA-ASEAN COOPERATION on Marine Geoscience Research and Geohazards Reduction & Mitigation' by Project Group (Mr. Shi Xianyao, **Prof Yin Ping**, **Mr Tu G.H.**, **Dr Chen X.Y.**, **Prof Wang B.J.**, China Geological Survey, MNR, CHINA

**Kick-off (Online) Meeting: CCOP - CGS Book Project on Coastal Erosion and Mitigation**

The Online Kick-off Meeting of the CCOP Book Project on Coastal Erosion & Mitigation in Asian Countries held on Thursday 22 July 2021, 13:30-15:00 (Bangkok Time) hosted by COOPTS and Qingdao Institute of Marine Geoscience, CGS. The project has been approved at the 76<sup>th</sup> CCOP Steering Committee Meeting held on 7 July 2021. The meeting was very successful in reaching important consensus among participants of MCs for our further cooperation. It was attended by

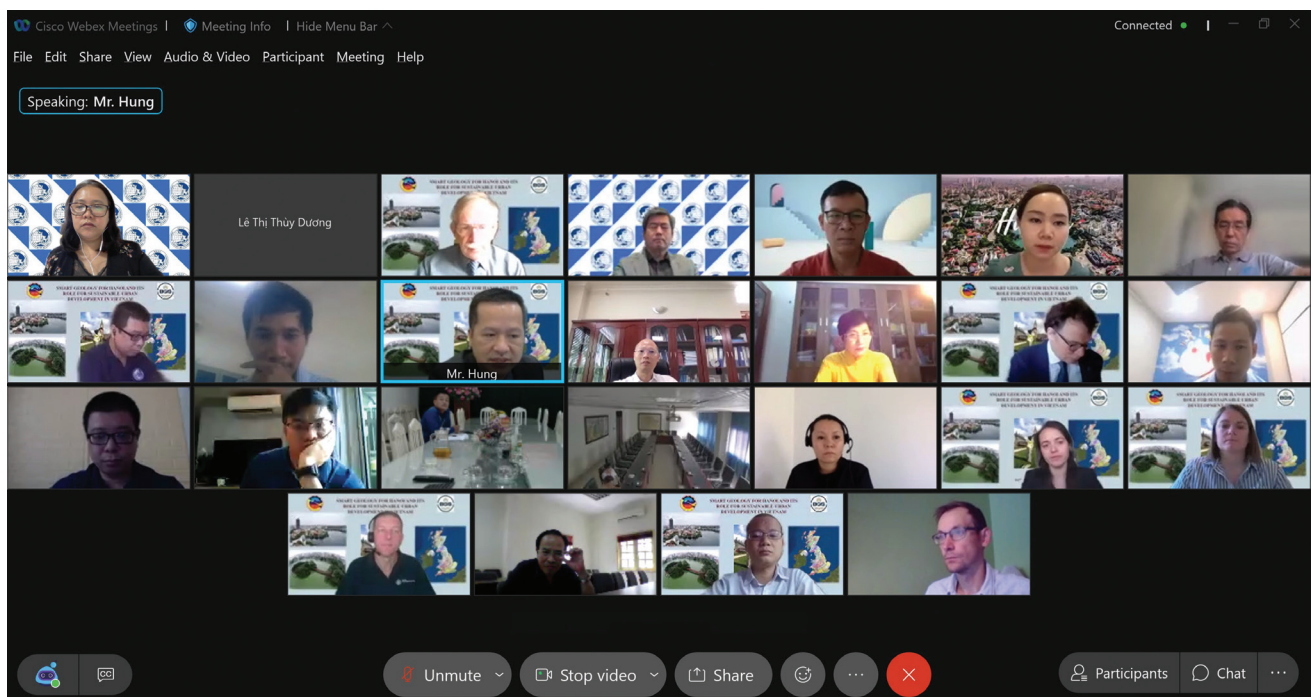
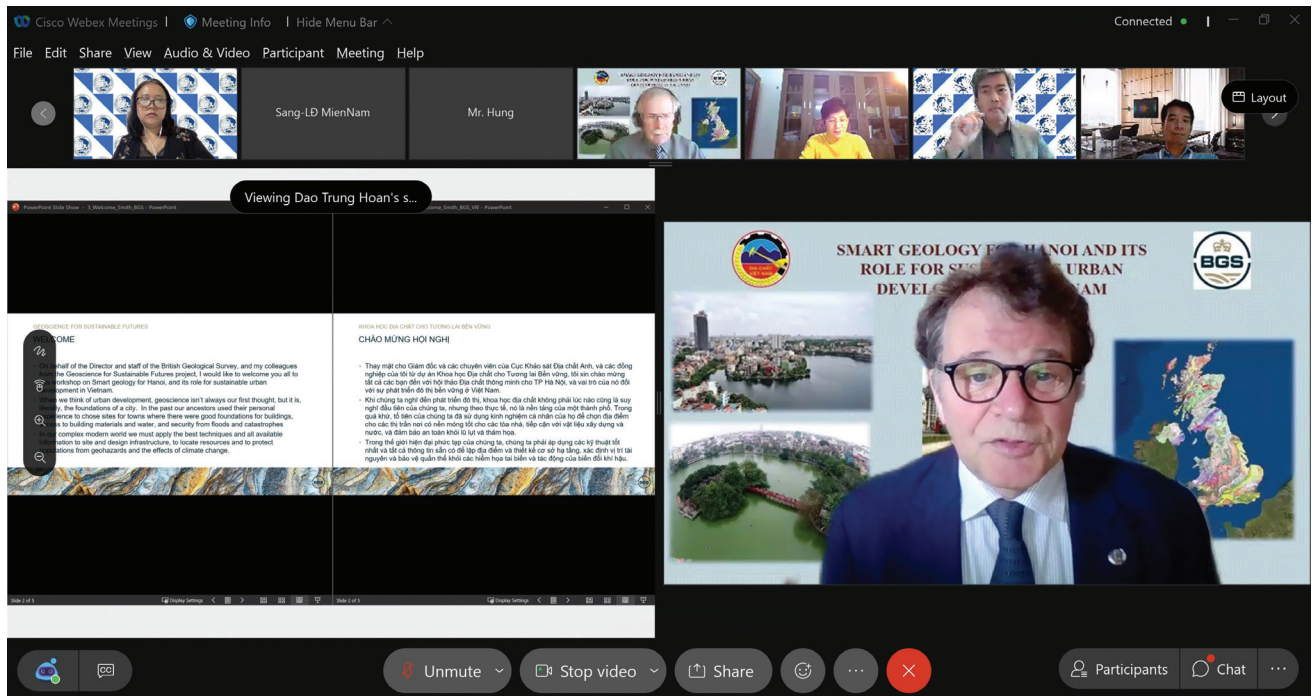
34 participants from Brunei Darussalam, China, Indonesia, Japan, Republic of Korea, Malaysia, Myanmar, Philippines, Singapore, Thailand and the Technical Secretariat. In the meeting, participants discussed work plan for book project and agreed the proposed book compilation schedule. The book will be published in English. The printing will be done in China. CGS will support the publishing of the book with its budget amount \$30,000. The book must be published by the end of June 2022.



## GDGMV-BGS workshop entitled “Smart geology for Hanoi and its role for sustainable urban development in Vietnam”

On 4 August 2021, 13:33 – 17:20 Vietnam Time, the GDGMV-BGS workshop entitled “Smart geology for Hanoi and its role for sustainable urban development in Vietnam” has organized virtual online via WebEx in order to enhance cooperation and develop projects between General Department of Geology and

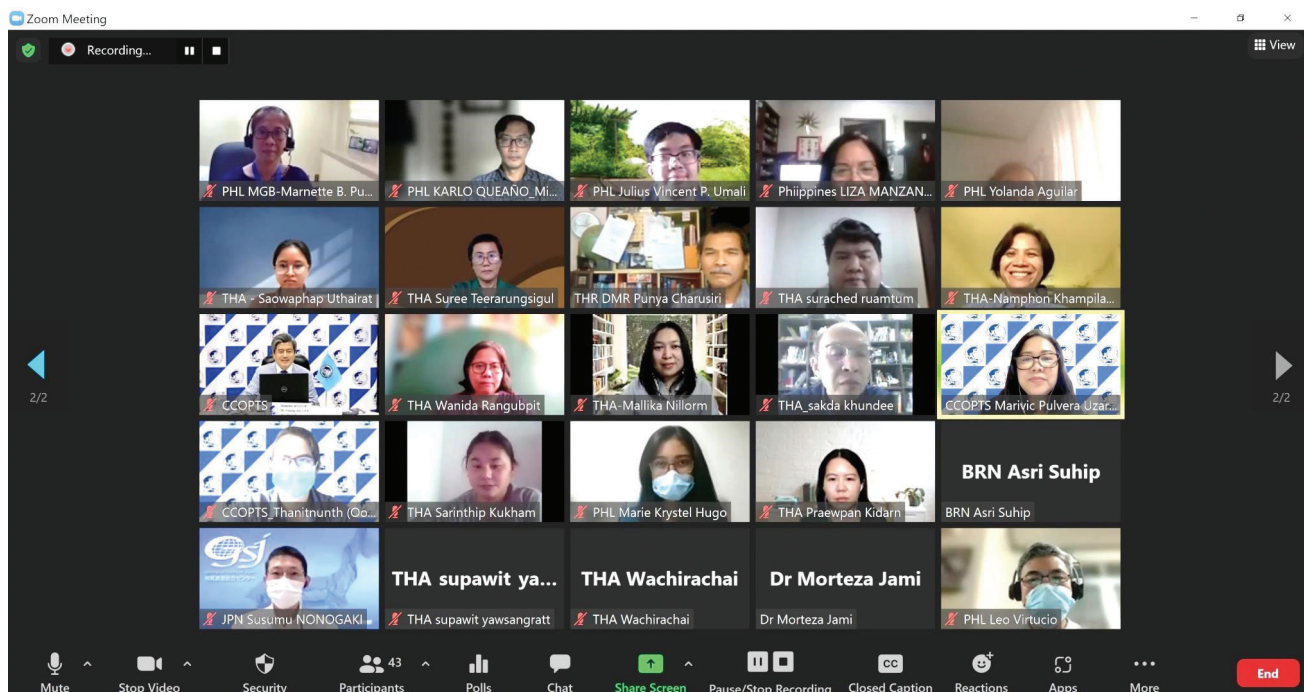
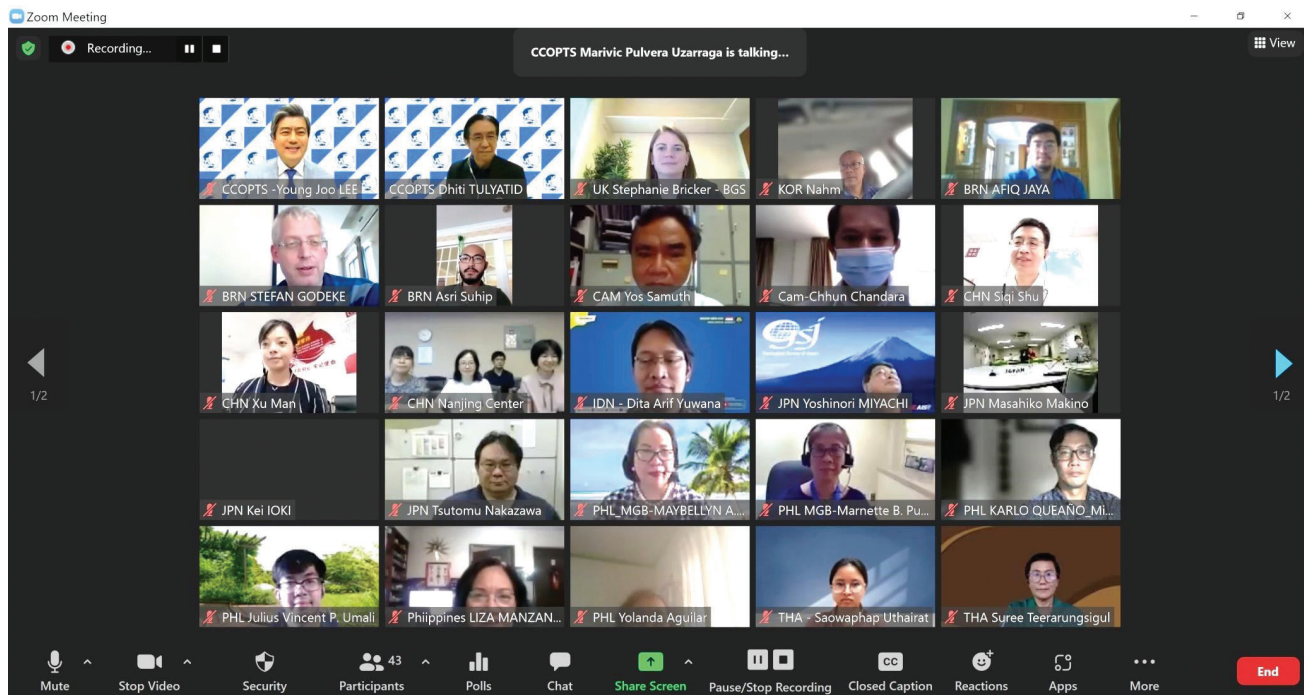
Minerals of Vietnam (GDGMV) and Geological Survey (BGS), based on the Memorandum of Understanding (MoU). The workshop focuses on: (1) the role of urban geology for sustainable development; (2) urban geological planning for Vietnam in 2021-2022, vision to 2030. **Dr Young Joo LEE**, CCOPTS Director, **Dr Dhiti Tulyatid**, Regional Expert and **Mrs Marivic Urzaraga**, Project Manager had joined this virtual meeting.



## Kick-off (Online) Meeting: CCOP – KIGAM Urban Geology Project

On **18 August 2021**, 13:30 – 15:15 (Bangkok Time), the Kick-off (Online) Meeting: CCOP – KIGAM Urban Geology Project was conducted online via Zoom Application. The meeting started at 13:30, **Dr Dhiti Tulyatid**, Regional Expert, CCOPTS was as an MC and facilitator

of the Meeting. Opening Ceremony: **Dr Young Joo LEE** kindly delivered the Welcome and Opening Address. The meeting was attended online by total 44 participants from BGS and 10 CCOP Member Countries (Brunei Darussalam, Cambodia, China, Indonesia, Japan, Korea, Malaysia, Philippines, Thailand and Vietnam) and CCOPTS.



**Dr Stephanie Bricker**, Urban Geoscience Team Leader, BGS, gave a presentation on “Urban Geoscience: BGS and Europe”. She emphasized on how importance geological data has to Urban Geology but always be forgotten. The Urban geology Expert Group for Europe comprised 50 Members across 21 European Countries with three science priorities: Geological pressures in urban catchments; Geo-city information model; and Geoscience Community. The Urban Strategy focuses on Urban Environment with the target by 2050 all Europeans are “living well, within the limits of the planet”. She also covers some of EuroGeoSurvey science topics: Digital Twin; Safety, Security & Well-being; Climate change and decarbonization (Energy); and Resourcing Industry (Raw Materials). The EGS Urban Geology Expert Group activities include: Geo-city Info Models; Urban Catchments; & Geoscience Communication.

BGS Urban Geoscience: BGS approach for urban geoscience research: Strong science evidence base; addressing urban and environmental policy; and working with the ‘problem owner. BGS Urban Geoscience is based on engineering geology through the characterizing the geological properties and process of the near-surface environment-engineered zone in urban environment. The example work includes those of Greater Manchester: Brownfield Ground Risk Tool; BGS is also active on resilience of Asian Cities: Hanoi, Vietnam; Kuala Lumpur, Malaysia;

and Singapore. At the end she listed a number of big issues in UG.

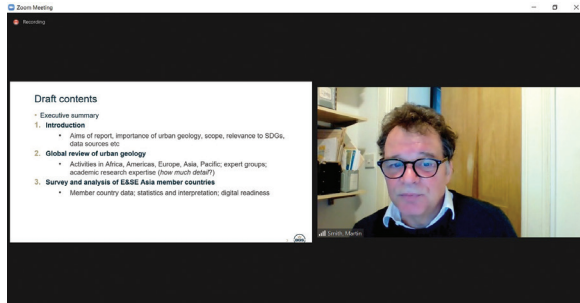
**Dr Dhiti Tulyatid**, Regional Expert, CCOPTS, gave a presentation on the background information of the CCOP-KIGAM Urban Geology Project. This 4-year project has the objectives to establish the international cooperation network on urban geology among MCs and CCs. The output of the project include: CCOP capacity building programme; the CCOP Expert Group on urban geology; and a summary report on the status of CCOP region on urban geology. He proposed the general and MCs’ chapter contents of the summary report as well as the work plan. The meeting considered and agreed with the proposed contents of summary report and the work plan. In order to guide MCs on what should be included in their summary report, the meeting agreed to have BGS prepare a questionnaire survey for MCs to check what they will need to put into the report. BGS representative also agreed to: 1. Provide an outline for the Global perspective of urban geology report section; and 2. design a survey for the CCOP urban geology as BGS already has some experience.

**Closing: Dr Young Joo LEE** delivered a brief closing remark.

**Consultation (Online) Meeting with BGS, CCOP – KIGAM Urban Geology Project: Proposed outline of CCOP UG Report and Questionnaire.**

On **22 September 2021**, 14:00 – 15:20 (Bangkok Time), the Consultation (Online)

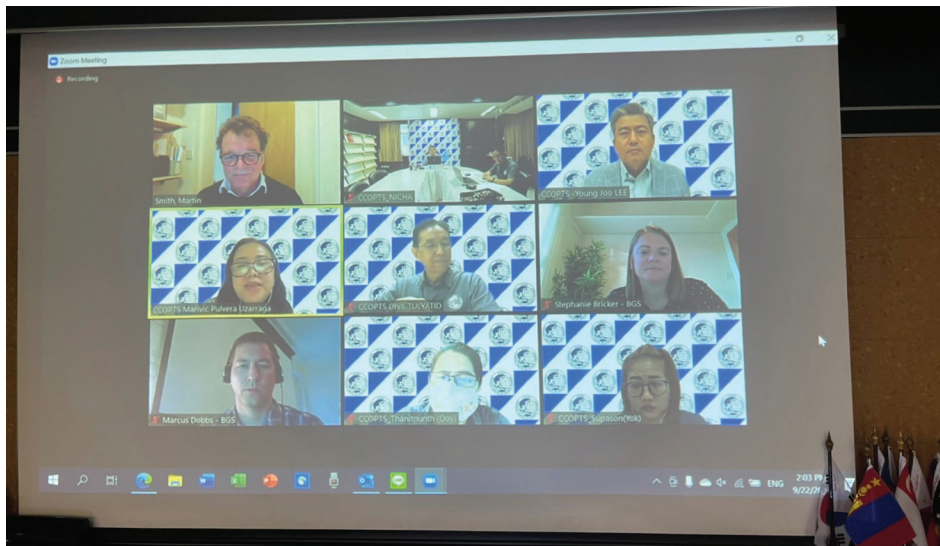
Meeting with BGS, CCOP – KIGAM Urban Geology Project: Proposed outline of CCOP UG Report and Questionnaire was attended by BGS and CCOPTS. The meeting aims to continually discuss on proposed outline for CCOP Urban Geology Report and draft questionnaire for MCs.



**Dr Martin Smith**, BGS gave a presentation on the “Proposed outline for CCOP urban geology report”.



BGS (**Stephanie Brick**) has provided the drafted questionnaire to CCOPTS.



The meeting agreed that BGS compile a summary report to cover a European perspective with some general global view based on the current/pre-existing information available. There is no need to create new materials for the report. The final report will be submitted by the end of November 2021 will mainly include two parts, a summary report on the global/European perspective on urban geology and the summary result achieved from information received from MCs’ completed questionnaire.

CCOPTS also informed the meeting that there are total of 11 MCs that participate in this project through their nomination of national experts on urban geology. These countries are Brunei Darussalam, China, Indonesia, Japan, Korea, Malaysia, Mongolia, Myanmar, the Philippines, Thailand and Vietnam.

The meeting agreed on the following work schedule:

- BGS needs to have a test run for the questionnaire/ CCOPTS will seek someone to answer the questionnaire for the test run. It should be done by the end of next week (Fri 1 October 2021).
- Questionnaire will be sent out to MCs and received back within 3 – 4 weeks (end of Oct 2021.).
- BGS will have about 7-10 days to quickly analyze the answers to the questionnaire.
- A Workshop will be held on Wed 10 November 2021. MCs experts will give presentations on a summary of their answers. BGS will summarize the findings from the questionnaire.
- After the workshop, CCOP & BGS will summarize the final report & submit it to KIGAM by the end of November 2021.

## Online Workshop of CGS-CCOP-ASEAN IGDP Project on Geoscience Information

The Online Workshop of CCOP-ASEAN-CGS IGDP Project on Geoscience Information was held online on 19-21 October 2021. This was funded by China Geological Survey (CGS),

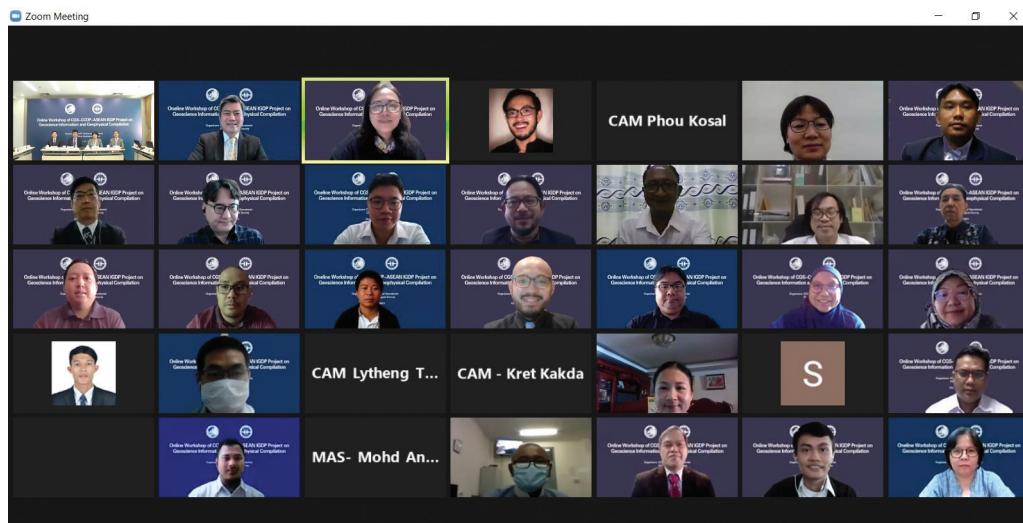
hosted by CCOP and Development Research Center (DRC) of CGS. There were 46 participants from Brunei, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Mongolia, Myanmar, Philippines, Thailand, Vietnam and CCOPTS.



The workshop was officially opened with addresses by **Dr Young Joo Lee**, CCOPTS, **Mr Ma Yongzheng**, CGS, and **Ms Huo Yaqin**, DRC of CGS. Project leader **Prof Zhang Minghua** from CGS gave an introduction and progress of IGDP Project.

The workshop proposed the IGDP Project Working Group 2021-2025 members as following:

- Brunei Darussalam: Mr. Muhammad Asri Akmal (NC)
- Cambodia: Mr. Sreang Samnang (NC)
- China: Dr Zhang Minghua (NC) & Ms. Qiao Jihua
- Indonesia: Noor Muhammad Indragiri (NC), Aji Suteja, M Ervan, Hesty Sampeliling
- Japan: Dr. Masahiko Makino (Gravity)
- Korea: Dr. Kyong-O KIM
- Lao PDR: Mr. Xayyakone Phetpaseuth (NC) & Mr. Tosakan Chanthavilayvong
- Malaysia: Mr. Muhamad Safid Saad (NC) & Ahmad Zulkifli Kamaruzaman.
- Philippines: Andres O. Pangilinan, Jr. (NC) & Carleen Joy Gatdula
- Mongolia: Purevsuren Santiv (NC) & Magnaibayar Chinzorigt
- Myanmar: Mr. Aung Kyaw Moe (NC) & Mr. Aung Than
- Thailand: Ms. Wanida Rangubpit (NC) & Mrs. Wanwisa Nomsungnoen
- Vietnam: TBC



On the way forward, the workshop discussed and agreed on the following:

- Annual and more training/workshops on advanced geoscience information technologies and RGIS-IGDP software. Training for individual MCs will be conducted upon requests by email including proposed schedule.
- Practices of intelligent geological map compilation system and IGCloud focusing on geophysical data (gravity, magnetic, MT data) for CCOP MCs and other relevant professionals.
- Data protection policy/ end-user agreement, license agreement, including the Bouguer anomaly map will be established.
- RGIS. Online and geological data analyses system will be made available via IGCloud.
- CCOPTS will send letter to CCOP MCs requesting Bouguer anomaly map or data for the IGDP Project, together with gravity data agreement (to be drafted by DRC of CGS). Member Countries will submit the map or data by end of 2021. The result is a digital product of all MCs and will be released by CCOP on its website and on IGCloud.

- Discussion/workshop to be conducted for IGDP and GSi projects on accessibility and reuse/sharing of data between IGCloud and GSi systems.
- Next workshop will be conducted once the draft CCOP gravity map is achieved, expected in early 2022.

### CCOP-KIGAM Geoscience Data Repository (GDR) Project

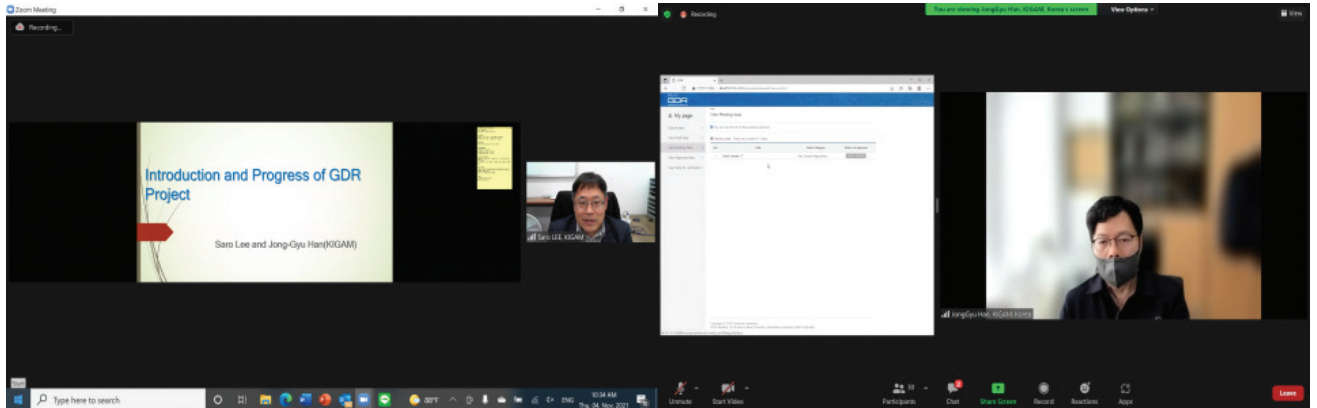
#### GDR Project Second Working Group Virtual Meeting/Workshop

Due to COVID-19 pandemic, the annual international workshop was held virtually using Zoom Meeting on 4-5 November 2021. There were 38 participants from the CCOP Member Countries consisting of members of the Project's Working Group as well as their team, and the CCOP Technical Secretariat. Countries represented are Brunei Darussalam, Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam.



**Dr Saro Lee** presented the update of the GDR Project while **Dr Han** led the training on the usage of the GDR Web system. Member of the GDR Working Group from each CCOP Member Country present made a presentation on the progress of the data uploaded and published to the GDR Web System. It has been

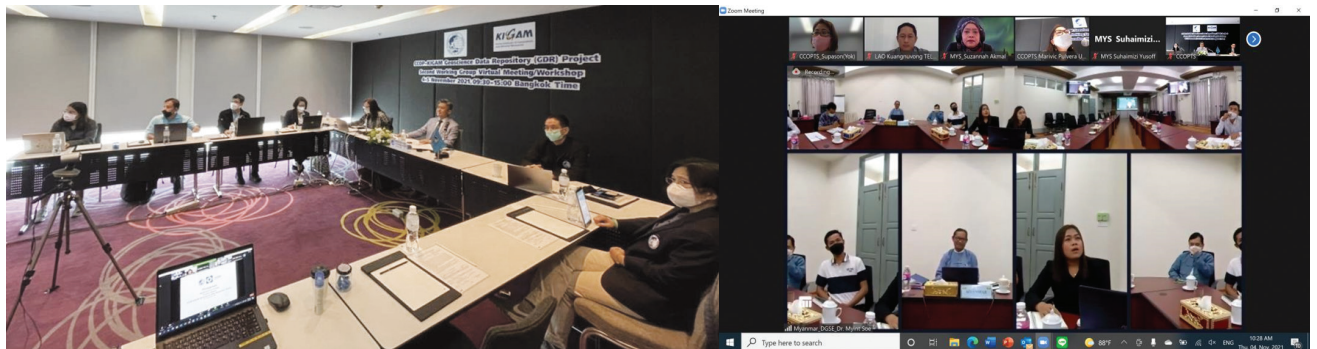
agreed that each Member Country will target to upload and publish at least 100 sample data to the GDR Web System each year. Country presentations included challenges faced, as well as suggestions and recommendations for the Project and its system.



All the suggestions and recommendations as well as the challenges will be taken into account in the continuing development of the GDR system, with error corrections and stabilization. More feedback for the improvement of the system will also be accepted.

classifications as proposed by Japan; b) creation of batch upload function to facilitate faster submissions of data to the system. Customized hands-on training for a member country needing it will be facilitated once the pandemic situation eases and international travel be possible. Installation of the GDR system at CCOPTS or Cloud server will be initiated.

Priorities in the refinement of the GDR system include: a) simplification of the sample



The next workshop will be organized in April next year or later depending on the COVID-19 pandemic situation. If the workshop can be organized offline, all the GDR working group members participating will be required to bring data to upload to the GDR system, as well as a

typical sample from their country to display at the CCOP Technical Secretariat office in Bangkok, Thailand.

Target number of data upload for 2022 is at least 100 samples per organization or country.

## ■ Aim III: Promotion of Geoscience Education, Capability Building and Outreach

### GSJ Webinar on Practical Geological Survey Techniques - Application to Geological Disaster Mitigation

From 2018, GSJ has held a regular training course for young geological researchers and engineers in the CCOP member countries, focusing on practical geological survey techniques for environmental conservation and mitigation of geological disasters. Unfortunately, the training course in 2020 was forced to be cancelled due to the COVID-19 pandemic. Since the pandemic is still raging all over the world, face-to-face training course in 2021 will not be held. Instead, three online seminars using the Zoom application will be conducted. Two of them are practical trainings on exploration and analysis techniques, which will help the participants to improve their geological survey skills. The other consists of lectures related to

geological disaster mitigation. Although those who are eligible can take all three courses, they have to apply for each course separately.

#### Course 1: Lectures on geological disaster mitigation, 28-30 June 2021

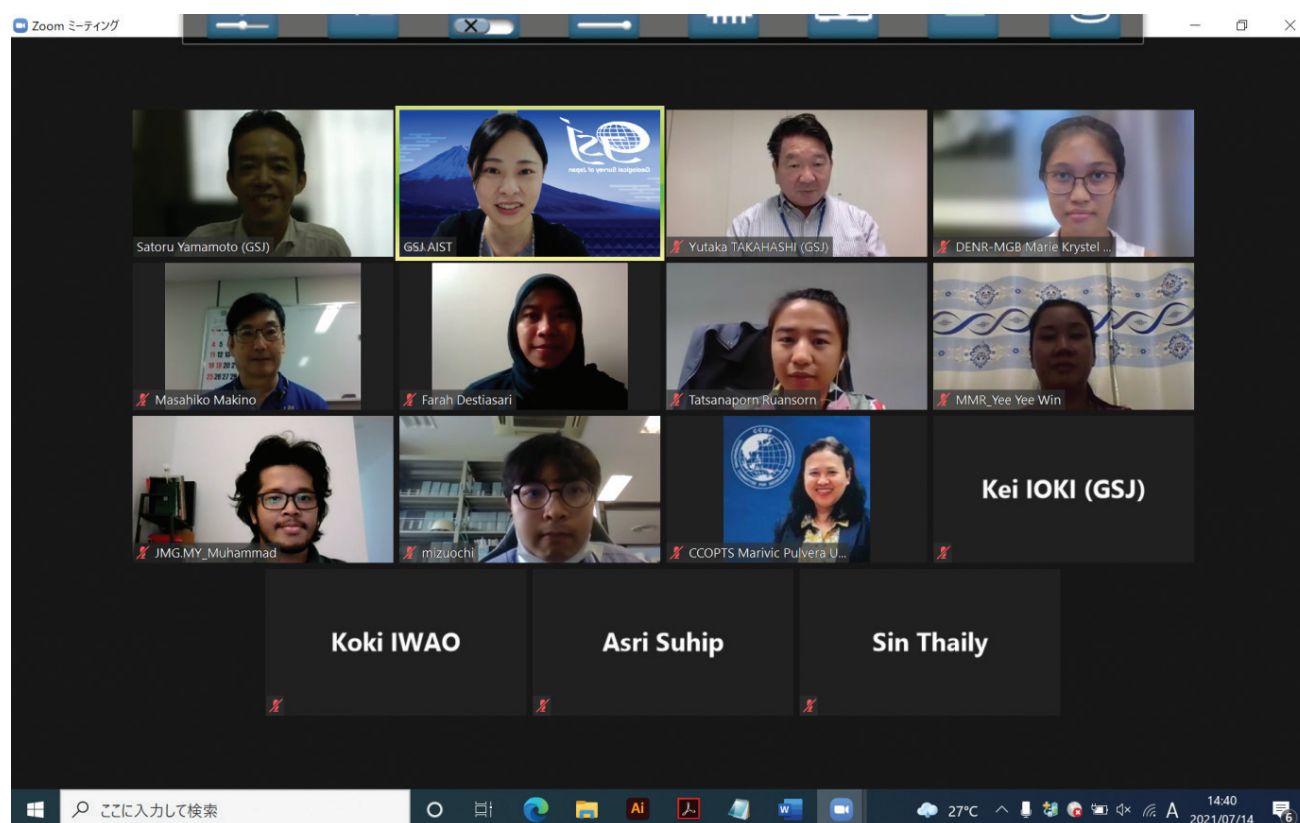
This course provides lectures on geohazards, basic geology, and gravity and magnetic exploration techniques. It also includes a virtual tour of the Geological Museum of GSJ.

#### Course 2: Practical training on Geographic Information System (GIS), 5-7 July 2021

Lecture and practical exercises on digital geological maps and databases preparation using GIS software.

#### Course 3: Practical training on Remote Sensing, 12-14 July 2021

Lectures and practices to develop basic skills of remote sensing data processing and application.



## KIGAM/IS-Geo Regular Training Courses

Due to the global spread of COVID-19, IS-Geo offered an online training course for geoscience experts from CCOP member countries organized in 2020. The planned face-to-face course in 2021 inviting the 2020 online course trainees, was cancelled due to the continuing pandemic. For 2021, the following online ISGeo courses were organized.

- Multidisciplinary Approaches to Understand and Utilize Groundwater Resources course will take place online from 6-10 September 2021 via <http://webinar.kafe.or.kr> (live).
- Geological Field Mapping: Drawing Geological Maps course will be accessible from 11 October to 15 November 2021 via YouTube and USB (post).

The participants of these online courses will be invited to a face-to-face training course in 2022 which will take place at International School for Geoscience Resources of KIGAM in Daejeon (Korea).

## IS-Geo QnA Session

Due to COVID-19, IS-Geo was not able to invite trainees from the 2020 ISGeo Online Course to KIGAM, Korea. Thus, IS-Geo organized 'Regular Online QnA' for the 2020 online course participants, where the trainee can meet the lecturers (via Zoom) and discuss their newest research or questions from 2020 course.

The course includes following modules:

### Module 1. Geological Mapping and Mineral Exploration,

Instructor: Dr Gyesoon Park

### Module 2. Groundwater

Instructor: Dr Yongcheol Kim

### Module 3. Oil and Gas Hydrate

Instructor: Dr Joo Yong Lee

## The list of trainees who replied to attend the QnA are the following

### Module 1. Geological Mapping and Mineral Exploration, 2 trainees from Thailand

**Module 2. Groundwater**, 2 trainees, (1) Malaysia and (1) Myanmar

**Module 3. Oil and Gas Hydrate**, 6 trainees, (1) Brunei Darussalam, (1) Thailand, (1) Philippines, (1) Cambodia, and (2) Myanmar

## CCOP-IERI Internship Program

The 73<sup>rd</sup> CCOP Steering Committee Meeting held in November 2019, Chiangmai, Thailand accepted the International Environmental Research Institute (IERI) as CCOP's Cooperating Organization. IERI is based in Gwangju Institute of Science and Technology (GIST), Republic of Korea.

IERI is interested to collaborate with CCOP on the following:

- Providing GIST postgraduate scholarships (Masters and PhD, in the title of CCOP-GIST scholarship)
- Providing GIST postgrad interns to CCOP (1 person, 3 months)
- Accepting researchers, government officers from CCOP Member Countries as IERI interns (5-10 persons, 3-6 month)
- Opportunity of GIST-supported Research Project by Young Earth Scientists from CCOP region (2,000 USD per year)

For the 2021 CCOP-IERI Internship program, the following were selected.

1. **Ms Irina Ishan** (Brunei) currently works as a climate researcher in the Brunei Climate Change Secretariat, Ministry of Development.
2. **Ms Purevsuren Munkhtur** (Mongolia) currently works as a researcher in the Institute of Geography and Geoecology, Mongolian Academy of Sciences.

The implementation of the CCOP-IERI Internship program 2021 is temporarily terminated due to the COVID-19 pandemic in South Korea. The program is expected to be resumed in early 2022 / depending on the current COVID-19 situation in South Korea.

The CCOP-IERI Internship Program was initiated from 2019, and to date, listed in the table below are those who were successfully granted internship at IERI.

Internship Period	Name	Organization/Country
Oct 2020 – Jan 2021	<b>Ms Tseyenkhand Punsantsogvoo</b>	Institute of Geography and Geocology, Mongolian Academy of Sciences, Mongolia
	<b>Ms Nouvarat Prinpreecha</b>	Department of Mineral Resources (DMR), Thailand
	<b>Ms Nguyen Quynh Anh</b>	Vietnam Institute of Geosciences and Mineral Resources (VIGMR), Vietnam
Feb-Jun 2020	<b>Dr Manussawee Hengsuwan</b>	Department of Groundwater Resources (DGR), Thailand
Sep-Dec 2019	<b>Ms Triwigati, Purnaning Tuwuh</b>	Indonesia

### East Asian Geoscience and Environment Research (EAGER) Project / Ric Terman Award

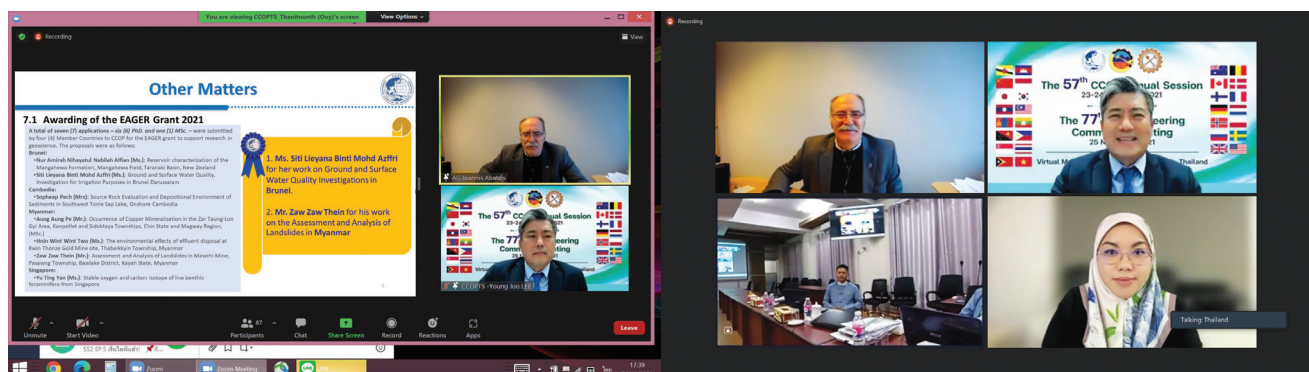
The 72<sup>nd</sup> CCOP Steering Committee Meeting held in March 2019, Samui Island, Thailand approved the Geological Society of America (GSA)'s proposal through the CCOPTS to resume the EAGER Project / Ric Terman Award from 2019. The EAGER award was set up under a trust fund in the Geological Society of America (GSA) with the personal contribution of the late **Dr Maurice Terman**, CCOP Honorary Advisor. There had been 13 recipients of this grant, Malaysia (2003), Japan (2004), China (2005), Korea (2006), Philippines (2007), Thailand (2009), Vietnam (2009), Indonesia (2010), Thailand (2011), Malaysia (2012), Japan (2013), China (2015) and Mongolia (2019). The value of the award is up to USD 5,000.

In 2021 call for applications for the Ric Terman

Award were opened to Brunei Darussalam, Cambodia, Lao PDR, Myanmar, Papua New Guinea, Singapore and Timor-Leste. A total of seven (7) applications – six (6) PhD. and one (1) MSc. – were submitted by four (4) Member Countries to CCOP for the EAGER grant to support research in geoscience.

Since there was no EAGER Award call for 2020 due to the pandemic, for this year 2021, two (2) successful PhD candidates, was awarded at the 57<sup>th</sup> CCOP Annual Session, 23-24 November 2021 as follows:

- 1. Ms Siti Lieyana Binti Mohd Azffri** for her work on Ground and Surface Water Quality Investigations in Brunei.
- 2. Mr Zaw Zaw Thein** for his work on the Assessment and Analysis of Landslides in Myanmar.



## FINANCIAL HIGHLIGHTS

From 1 January to 31 December 2021, Member Countries' total cash contributions amounted to **USD 499,136.69**, consisting of Cambodia (USD 10,000), China (USD 60,000), Indonesia (USD 55,000), Japan (USD 60,000), Republic of Korea (USD 60,000), Malaysia (USD 50,000), Mongolia (USD 10,000), Myanmar (USD 10,000), Philippines (USD 40,000), Singapore (USD 10,000), Thailand (USD 49,136.69) and Vietnam (USD 25,000).

Cambodia cash contribution year 2020 (USD 10,000) was received in 2021 and Thailand cash contribution year 2022 (USD 50,000) was received in 2021.

The arrears cash contribution expected to receive from Papua New Guinea year 2019-2021 (USD 75,000.00), Timor-Leste year 2019-2021 (USD 30,000.00), Lao PDR year 2020-2021 (USD 20,000.00) and Brunei Darussalam year 2021 (USD 10,000) (**Table 1**).

**Table 1: Cash Contributions of Member Countries for 2019-2021**

Member Countries	2019 Contribution Received in 2019	2020 Contribution Received in 2020	2021 Contribution Received in 2021	Arrears Contribution Expected to Receive
Brunei Darussalam		10,000.00	-	10,000.00
Cambodia	10,000.00	-	*10,000.00 (Y2020) 10,000.00	-
China	50,000.00	60,000.00	60,000.00	-
Indonesia	55,000.00	55,000.00	55,000.00	-
Japan	60,000.00	60,000.00	60,000.00	-
Republic of Korea	60,000.00	60,000.00	60,000.00	-
Lao PDR	-	10,000 (Y2019)	-	10,000 (Y2020) 10,000
Malaysia	50,000.00	50,000.00	50,000.00	-
Mongolia	10,000.00	10,000.00	10,000.00	-
Myanmar	10,000.00 5,000.00 (2/2) (Y2018)	10,000.00	10,000.00	-
Papua New Guinea	-	-	-	25,000 (Y2019) 25,000 (Y2020) 25,000
Philippines	40,000.00	40,000.00	40,000.00	-
Singapore	10,000.00	10,000.00	10,000.00	-
Thailand	40,000.00	40,000.00	49,136.69 **50,000.00	-
Timor-Leste	-	-	-	10,000 (Y2019) 10,000 (Y2020) 10,000
Vietnam	25,000.00	25,000.00	25,000.00	-
<b>Total</b>	<b>425,000.00</b>	<b>440,000.00</b>	<b>499,136.69</b>	<b>35,000 (Y2019) 45,000 (Y2020) 55,000</b>

\* Cambodia cash contribution for 2020 was received in 2021 (USD 10,000)

\*\* Thailand cash contribution for 2022 was received in 2021 (USD 50,000)

In addition to Member Countries' contributions, the amount of **USD 44,378.97** earned from the management of projects during January - December 2021 period which from "International Union of Geological Sciences Recognized Big Science Program Deep-time Digital Earth (DDE)" (USD 500), "CCOP-KIGAM Groundwater Project: Vulnerability Assessment to Climate Change of Groundwater System in Greater Mekong Subregion and Comparative Study of Groundwater Dependent Ecosystem", 1<sup>st</sup> Installment 2021 (1/2) (USD 12,096.27) , "CCOP-KIGAM GDR Project: Sharing System Establishment of Digital Geological Sample Data in CCOP Countries", 1<sup>st</sup> Installment 2021 (1/2) (USD 6,653.30) and 2<sup>nd</sup> Installment 2021 (2/2) (USD 6,317.01), " CCOP-KIGAM Urban Geology Project: Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia", 1<sup>st</sup> Installment 2021 (1/2) (USD 6,069.99) and 2<sup>nd</sup> Installment 2021 (2/2) (USD 5,742.40), "CCOP Geoinformation Sharing Infrastructure for East and Southeast Asia (GSi)" (USD 3,000)

and "CCOP-GSJ Groundwater Project Phase IV Meeting" (USD 4,000) are shown in (**Table 2**).

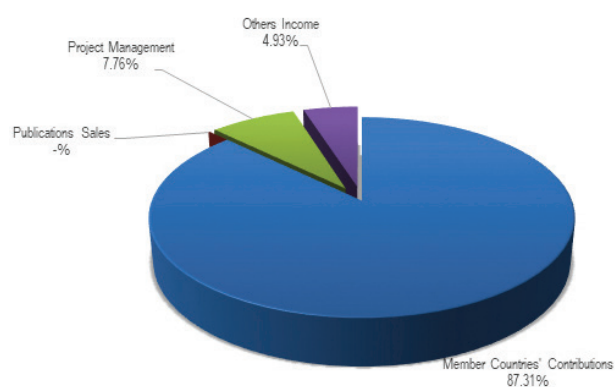
Other incomes during the period amounted to **USD 28,142.58** from interest earned (USD 1,550.28), processed from sale of CCOP official car (USD 26,587.40), gain on current exchange rate (USD 4.90) and miscellaneous incomes (USD -.). The total income during the period was **USD 571,658.24**. The expenditure of **USD 391,977.54** was incurred from operation and administrative support. The Cash at Bank as of December 31, 2021 amounted to **USD 1,077,195.16**.

The Technical Secretariat office premise is continuously provided by the Royal Thai Government, through the kind arrangements of the Department of Mineral Resources (DMR), Ministry of Environment and Natural Resources, at the CCOPTS Building, DMR Complex, Rama VI Road, Bangkok, Thailand.

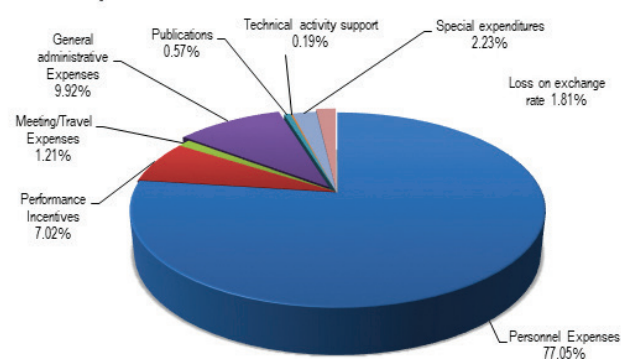
**Table 2: Management Income from Execution of Project and Activity  
(January 1 - December 31, 2021)**

Funding Source	Activities	Country	Contract Period	Amount (USD)
DDE	International Union of Geological Sciences Recognized Big Science Program Deep-time Digital Earth	Bangkok, Thailand	January 2021	500.00
KIGAM	CCOP-KIGAM Groundwater Project: Vulnerability Assessment to Climate Change of Groundwater System in Greater Mekong Subregion and Comparative Study of Groundwater Dependent Ecosystem	1 <sup>st</sup> Installment 2021 (1/2)	March 1, 2021	12,096.27
KIGAM	CCOP-KIGAM GDR Project: Sharing System Establishment of Digital Geological Sample Data in CCOP Countries	1 <sup>st</sup> Installment 2021 (1/2)	March 1, 2021	6,653.30
		2 <sup>nd</sup> Installment 2021 (2/2)		6,317.01
KIGAM	CCOP-KIGAM Urban Geology Project: Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia	1 <sup>st</sup> Installment 2021 (1/2)	March 1, 2021	6,069.99
		2 <sup>nd</sup> Installment 2021 (2/2)		5,742.40
GSJ/AIST	CCOP Geoinformation Sharing Infrastructure for East and Southeast Asia (GSi)	Bangkok, Thailand	June 2021	3,000.00
GSJ/AIST	CCOP-GSJ Groundwater Project Phase IV Meeting	Bangkok, Thailand	June 2021	4,000.00
<b>Total Project Management Income</b>				<b>44,378.97</b>

**CCOP Revenue 2021**



**CCOP Expenditure 2021**



# LIST OF CONTACTS

## CCOP STEERING COMMITTEE

### MEMBER COUNTRIES PERMANENT REPRESENTATIVES (16)

The Steering Committee is a policy making body of CCOP, which shall establish policies and principles for CCOP activities, approve work plan, budget, accounts for each year, new programme proposals, establish subsidiary bodies, appoint the Director, receive and consider the reports of Director on the functions delegated to him.

#### **BRUNEI DARUSSALAM:**

**Ir. Norazmi bin Othman**  
Permanent Representative of Brunei Darussalam to CCOP  
Act. Director of Water Services  
Public Works Department  
Ministry of Development  
Brunei Darussalam

#### **CAMBODIA:**

**H.E. Mr Cheap Sour**  
Permanent Representative of Cambodia to CCOP  
Director-General  
General Department of Petroleum  
Ministry of Mines and Energy  
#13-14 Russian Confederation Blvd.  
Khan Dangkor, P.O. Box 1442  
Phnom Penh, Cambodia

#### **CHINA:**

**Dr Li Jinfa**  
Chairperson, CCOP Steering Committee  
Permanent Representative of China to CCOP  
Deputy Director-General  
China Geological Survey (CGS)  
45 Fuwai Street, Xicheng District  
Beijing 100037  
People's Republic of China

#### **INDONESIA:**

**Dr Eko Budi Lelono**  
Vice-Chairperson, CCOP Steering Committee  
Permanent Representative of Indonesia to CCOP  
Head, Geological Agency  
Ministry of Energy and Mineral Resources (MEMR)  
Jl. Diponegoro No. 57, Bandung  
40122, West Java, Indonesia

#### **JAPAN:**

**Dr Shinsuke Nakao**  
Permanent Representative of Japan to CCOP  
Director-General  
Geological Survey of Japan, AIST  
National Institute of Advanced Industrial Science and Technology  
1-1-1 Higashi, No. 7, Tsukuba  
Ibaraki 305-8567, Japan

#### **KOREA:**

**Dr Pyeong-Koo Lee**  
Permanent Representative of Republic of Korea to CCOP  
President, Korea Institute of Geoscience and Mineral Resources (KIGAM), 124, Gwahak-ro Yuseong-gu, Daejeon, 34132, Republic of Korea

#### **LAO PDR:**

**Mr Keo Khamphavong**  
Permanent Representative of Lao PDR to CCOP  
Director-General, Department of Geology and Minerals  
Ministry of Energy and Mines  
Khounboulom Road, Vientiane

#### **MALAYSIA:**

**Ybrs Tuan Haji Hisamuddin Bin Termidii**  
Permanent Representative of Malaysia to CCOP.  
Director-General  
Department of Mineral and Geoscience Malaysia (JMG)  
Aras 9, Menara PJH, No. 2, Jalan Tun Abdul Razak, Presint 2, 62100 Putrajaya, Malaysia

#### **MONGOLIA:**

**Mr Kherlen Khishigjargal**  
Permanent Representative of Mongolia to CCOP  
Chairman, Mineral Resources and Petroleum Authority of Mongolia (MRPAM)  
Government Building XII  
Chingeltei District, Barilgachdin talbai-3, Ulaanbaatar, Mongolia

#### **MYANMAR:**

**Dr. Thet Tin Nyunt**  
Permanent Representative of Myanmar to CCOP  
Vice Minister, Ministry of Natural Resources and Environmental Conservation, Nay Pyi Taw, Republic of the Union of Myanmar

#### **PAPUA NEW GUINEA:**

**Mr Harry Kore**  
Permanent Representative of Papua New Guinea to CCOP  
Secretary, Department of Mineral Policy and Geohazards Management (DMPGM)  
Private Mail Bag, P.O. Box 32 National Capital District, Papua New Guinea

#### **THE PHILIPPINES:**

**Atty Wilfredo G. Moncano**  
Permanent Representative of the Philippines to CCOP  
Director, Mines & Geosciences Bureau (MGB)  
North Avenue, Diliman,  
Quezon City 1600  
Republic of The Philippines

#### **SINGAPORE:**

**Professor Adam Douglas Switzer**  
Permanent Representative of Singapore to CCOP  
Associate Professor, Asian School of the Environment  
Assistant Dean (Development),  
College of Science  
Deputy Director, Undergraduate Research Experience on Campus (URECA) program  
Principal Investigator,  
Earth Observatory of Singapore

#### **THAILAND:**

**Mr Pongboon Pongtong**  
Permanent Representative of Thailand to CCOP  
Director-General, Department of Mineral Resources (DMR)  
75/10, Rama VI Road, Ratchathewe Bangkok 10400, Thailand

#### **TIMOR-LESTE:**

**Mr Helio Casimiro Guttereres**  
Permanent Representative of Timor-Leste to CCOP  
President  
Institute of Petroleum and Geology – Public Institute (IPG-IP)  
Ministry of Petroleum and Mineral Resources  
Rua Jacinto Candido Bairo Central - Dili Timor Leste

#### **VIETNAM:**

**Dr Le Quoc Hung**  
Permanent Representative of Vietnam to CCOP  
Deputy General Director  
General Department of Geology and Minerals of Vietnam (DGMV)  
No. 6 Pham Ngu Lao, Hoan Kiem Dist., Hanoi, Vietnam

## CCOP COOPERATING COUNTRIES AND REPRESENTATIVES (14)

### AUSTRALIA:

**Dr Steve Matthew Hill**  
Representative of Australia to  
CCOP  
Chief Scientist  
Geoscience Australia  
G.P.O. Box 378, Canberra 2601  
Australia

### BELGIUM:

**Dr Vanessa Heyvaert**  
Representative of Belgium to  
CCOP  
Geological Survey of Belgium  
Jenner street, 13  
BE-1000 Brussels, Belgium

### CANADA:

**Dr Sonia Talwar**  
Representative of Canada to  
CCOP  
Director, Geological Survey of  
Canada - Pacific  
Natural Resources Canada,  
9860 West Saanich Road, P.O.  
Box 6000  
Sidney, B.C., V8L 4B2, Canada

### DENMARK:

**Mr Ioannis Abatzis**  
Representative of Denmark to  
CCOP  
Chairperson, CCOP Advisory  
Group  
Chief Geoscientific Advisor  
Geological Survey of Denmark  
and Greenland (GEUS)  
Øster Voldgade 10, DK-1350  
Copenhagen K, Denmark

### FINLAND:

**Dr Philipp Schmidt-Thomé**  
Representative of Finland to  
CCOP  
Head of International Cooperation  
Geological Survey of Finland  
(GTK)  
P.O. Box 96, FI-02151 Espoo  
FINLAND

### FRANCE:

**Mr Jean Claude Guillaneau**  
Representative of France to CCOP  
Director, International Division  
Bureau de Recherches  
Geologiques et Minières (BRGM)  
3 avenue C. Guillemin - BP 36009  
45060 Orléans Cedex 2  
France

### GERMANY:

**Dr Arne Hoffmann-Rothe**  
Representative of Germany to  
CCOP  
International Cooperation  
Bundesanstalt für  
Geowissenschaften und Rohstoffe  
(BGR)  
Federal Institute for Geosciences  
and Natural Resources  
Germany

### THE NETHERLANDS:

**Dr Michiel van der Meulen**  
Representative of The Netherlands  
to CCOP  
Chief Geologist  
TNO/Geological Survey of the  
Netherlands  
Princetonlaan 6, 3584 CB, Utrecht,  
The Netherlands  
Postal address: PO Box 80015,  
3508 TA, Utrecht,  
The Netherlands

### NORWAY:

**Mr Gunnar V. Soiland**  
Representative of Norway to  
CCOP  
Project Director  
Norwegian Petroleum Directorate  
(NPD)  
Prof. Olav Hanssensvei 10, P.O.  
Box 600, N-4003 Stavanger,  
Norway

### POLAND:

**Dr Michał Tomczak**  
Representative of Poland to CCOP  
Senior Marine Geologist  
Polish Geological Institute  
National Research Institute  
Ministry of Climate and  
Environment, Poland

### RUSSIAN FEDERATION:

**Dr Anfisa Pilitsyna**  
Representative of Russian  
Federation to CCOP  
Researcher, Geological Institute  
Russian Academy of Sciences  
Moscow, Russia

### SWEDEN:

**Ms. Lisbeth Hildebrand**  
Representative of Sweden to  
CCOP  
Senior Geologist – EU coordinator  
Geological Survey of Sweden  
(SGU)  
P.O. Box 670, SE-75128, Uppsala  
Sweden

### UNITED KINGDOM:

**Dr David I Schofield**  
Representative of the United  
Kingdom to CCOP  
Director, National and International  
Geoscience  
British Geological Survey (BGS)  
The Lyell Centre, Research  
Avenue South, Edinburgh EH 14  
AP, United Kingdom

### UNITED STATES OF AMERICA:

**Dr Jack H. Medlin**  
Representative of U.S.A. to CCOP  
Chief, Asian and Pacific Programs  
Office of International Geology  
U.S. Geological Survey (USGS)  
MS-954 National Center  
12201 Sunrise Valley Drive  
Reston, Virginia, 20192  
U.S.A.

## CCOP COOPERATING ORGANIZATIONS AND REPRESENTATIVES (17)

### **ASCOPE:**

**Mr Nopporn Chuchinda**  
Secretary-in-Charge, ASCOPE  
ASEAN Council on Petroleum  
PTT Public Company Limited  
(Head office)  
20th floor, Building 1  
555 Vibhavadi Rangsit Road,  
Chatuchak  
Bangkok 10900 Thailand

### **CIFEG:**

**Mr Max Vidal**  
President International Center for  
Training and Exchanges in the  
Geosciences (CIFEG) 3, Avenue  
Claude Guillemin, B.P. 6517,  
45065 Orléans Cedex 2, France

### **CPC:**

**Mr Gary Greene**  
President, Circum Pacific Council  
Center for Habitat Studies  
Moss Landing Marine Labs  
8272 Moss Landing Road, Moss  
Landing, CA 95039. USA

### **EURO-GEOSURVEYS:**

**Dr. Julie Hollis**  
Secretary-General,  
EuroGeoSurveys  
The Geological Surveys of Europe  
36-38, Rue Joseph II  
1000 Brussels, Belgium

### **GETECH:**

**Dr Simon Campbell**  
Head of Gravity and Magnetic  
Solutions  
Geophysical Exploration  
Technology (GETECH)  
Kitson House, Elmete Hall  
Elmete Lane, Roundhay, Leeds  
LS8 2LJ, United Kingdom

### **IERI:**

**Dr Kyoung Woong Kim**  
Director (Professor)  
International Environmental  
Research Institute  
123 Cheomdangwagi-ro, Buk-gu,  
Gwangju  
Republic of Korea

### **IOC:**

**Dr Vladimir Ryabinin**  
Executive Secretary  
Intergovernmental Oceanographic  
Commission (IOC) of UNESCO 1,  
rue Miollis, 75732 Paris CEDEX  
15, France

### **IOMAC:**

**Dr Hiran W. Jayawardene**  
Secretary-General  
Indian Ocean Marine Affairs  
Cooperation (IOMAC)  
Suite 4-212, Bandaranaika  
Memorial International Conference  
Hall (B.M.I.C.H.), Baudhaloka  
Mawatha Colombo 7, Sri Lanka

### **IUGS:**

**Prof. Dr Hiroshi KITAZATO**  
Tokyo University of Marine  
Science and Technology  
4-5-7 Konan, Minato-ku, Tokyo  
108-8477  
JAPAN

### **PETRAD:**

**Ms Berit Tvedt**  
Managing Director  
PETRAD - International  
Programme for Petroleum  
Management and Administration  
Prof. Olav Hanssens vei 10  
P.O. Box 598, NO-4003 Stavanger,  
Norway

### **SPC:**

**Dr Andrew Jones**  
Officer-In-Charge  
Director - Geoscience, Energy and  
Maritime Division (GEM)  
Secretariat of the Pacific  
Community  
Private Mail Bag, 241 Mead Road,  
Nabua Suva, Fiji Islands

### **UN-ESCAP:**

**Ms Tiziana Bonapace**  
Director  
Information and Communications  
Technology and Disaster Risk  
Reduction Division  
Building, Rajdamnern Nok Avenue  
Bangkok 10200, Thailand

### **UNEP:**

**Mr. Jian Liu**  
Director of the Science Division,  
UN Environment  
United Nations Environment  
Programme (UNEP)  
UN Building, Rajadamnern Nok  
Avenue, Bangkok 10200, Thailand

### **UNESCO:**

**Dr Hans Dencker Thulstrup**  
Representative of UNESCO-  
Jakarta to CCOP  
Senior Programme Specialist  
Water and Environmental  
Sciences,  
UNESCO Regional Science  
Bureau for Asia and the Pacific  
Jl. Galuh II No.5, Kebayoran Baru  
Jakarta 12110, INDONESIA

### **UKM**

**Associate Professor Dr Goh  
Choo Ta**  
Chair, SEADPRI  
Southeast Asia Disaster  
Prevention Research Institute  
(SEADPRI)  
Universiti Kebangsaan Malaysia  
(UKM) Selangor, Malaysia

### **THE WORLD BANK:**

**Mr Gotthard Walser**  
Senior Mining Specialist  
Industry and Mining Division  
Finance and Private Sector  
Development  
The World Bank Group  
1818 H. Street, N.W., Washington  
DC 20433, U.S.A.

### **YES NETWORK:**

**Ms Elyvin Nkhonjera**  
President  
Young Earth Scientists (YES)  
Network  
36-38, Rue Joseph II  
1000 Brussels, Belgium

## CCOP HONORARY ADVISERS

### CHINA:

#### **Prof. He Qixiang**

Honorary Adviser to CCOP  
Director, Research Center for  
Coastal Geology  
China Geological Survey (CGS)  
62 Fuzhou Road, Qingdao,  
266071  
People's Republic of China

#### **Mr Wang Daxiong**

Honorary Adviser to CCOP

#### **Mr. Wang Xionglin**

Honorary Adviser to CCOP

#### **Prof. Dr HE Qingcheng**

Honorary Adviser to CCOP  
APGN Coordinator  
Vice President  
Chinese Academy of Geological  
Sciences  
26 Baiwanzhuang Road, Xicheng  
District  
Beijing 100037, China

### GERMANY:

#### **Ms Franca Schwarz**

Honorary Adviser to CCOP

### INDONESIA:

#### **Prof. Dr Adjat Sudradijat**

Honorary Advisor to CCOP

#### **Dr Sukyar**

#### **Honorary Adviser to CCOP**

President Director,  
Mining Private Companies  
Indonesia

### JAPAN:

#### **Dr Hirokazu Kato**

#### **Honorary Adviser to CCOP**

Emeritus Researcher  
National Institute of Advanced  
Industrial Science and Technology  
Higashi 1-1-1, AIST Central 7,  
Tsukuba, Ibaraki 305-8567, Japan

#### **Dr Eikichi Tsukuda**

Emeritus Researcher Geological  
Survey of Japan, National Institute  
of Advanced Industrial Science  
and Technology (AIST), AIST  
Tsukuba Central 7, 1-1-1 Higashi,  
Tsukuba  
Ibaraki, 305-8567, Japan

### KOREA:

#### **Dr Hee Young Chun**

Honorary Adviser to CCOP  
914-1602 Treefull City  
Sangdae-Dong, Youseong-Gu  
Daejeon, Republic of Korea

### MALAYSIA:

#### **Mr Fateh Chand**

Honorary Adviser to CCOP  
465 Jalan Desa Utama,  
Taman Desa 58100  
Kuala Lumpur Malaysia

#### **Mr Chen Shick Pei**

Honorary Adviser to CCOP  
No. 1617, Jalan Urat Mata  
Lorong 3, 93350 Kuching  
Sarawak, Malaysia

#### **Dato' Yunus Abdul Razak**

Vice Chairperson, Advisory Group  
Associate Fellow, SEADPRI-UKM,  
Universiti Kebangsaan Malaysia  
(UKM), D'Villa 10, Jalan Sunway  
5/7, Bandar Sunway, 43500  
Semenyih, Malaysia

### NORWAY:

#### **Dr Øystein Berg**

Honorary Adviser to CCOP  
Vaganesveien 16,  
4052 Royneberg, Norway

### THE PHILIPPINES:

#### **Dr Guillermo R. Balce**

Honorary Adviser to CCOP  
Consultant for Energy and Mining,  
San Miguel Corporation 153  
EDSA, Mandaluyong City  
Metro Manila, Philippines

### THE NETHERLANDS:

#### **Dr E. Oele**

Honorary Adviser to CCOP  
Kagerdree 188  
2172 HR Sassenheim  
The Netherlands

#### **Dr Henk J.W.G. Schalke**

**Honorary Adviser to CCOP**  
Lijtweg 13  
2341 HA Oegstgeest.

#### **Dr Jos de Sonnevile**

Honorary Adviser to CCOP  
Advisor  
Deltares/TNO  
Sijzenlaan 44, The Hague,  
The Netherland 2566WJ

### THAILAND:

#### **Mr Sermsakdi Kulvanich**

Honorary Adviser to CCOP  
Sermsakdi K. Co., Ltd.  
76 Petkasem Road, Tambon  
Noppring, Moo 4, Amphoe Muang  
Phang-Nga 82000, Thailand

#### **Mr Somsak Potisat**

Honorary Adviser to CCOP  
125 /350 Magmai  
Soi 3/2, Ramintra 103/3 Rd.  
Kannayao District  
Bangkok 10230, Thailand

#### **Dr Prinya Nutalaya**

Technical Adviser to CCOP  
473, Soi Utane 12, Sri Nakorn  
Pattana, Navamintr Road, Bung  
Khum Bangkok 10240, Thailand

#### **Dr Adichat Surinkum**

Honorary Adviser to CCOP  
90 Moo 13 Ban Pa Dad Klang  
Soi 2 Padad Sub-district, Muang  
District  
Chiangmai Province  
Postal Code 50100

### UNITED KINGDOM:

#### **Dr Anthony Reedman**

Honorary Adviser to CCOP  
15 Malvern Road, Mapperley  
Nottingham NG3 5GZ  
United Kingdom

### U.S.A.:

#### **Dr David B. Prior**

Honorary Adviser to CCOP  
18310 Cattle Court  
College Station, Texas, 77845

## ABBREVIATIONS

Below are the meaning of the abbreviations used in the context of this report.

AG – Advisory Group  
AIST – National Institute of Advanced Industrial Science and Technology, Japan  
APGN – Asia Pacific Geoparks Network  
ASCOPE – ASEAN Council on Petroleum  
ASEAN – Association of Southeast Asian Nations  
ASOMM– the ASEAN Senior Officials Meeting on Minerals  
BGR – Federal Institute for Geosciences and Natural Resources, Germany  
BGS – British Geological Survey  
CC – Cooperating Country  
CCOPTS – CCOP Technical Secretariat  
CCS – Carbon Capture and Storage  
CCUS – Carbon Capture, Utilisation and Storage  
CCS-M – CO<sub>2</sub> Storage Mapping  
CGS – China Geological Survey  
CO – Cooperating Organisation  
CO<sub>2</sub> – Carbon Dioxide  
CPC – Circum Pacific Council  
DENR – Department of Environment and Natural Resources, Philippines  
DGM – Department of Geology and Minerals, Lao PDR  
DGSE – Department of Geological Survey and Mineral Exploration, Myanmar  
DMR – Department of Mineral Resources, Thailand  
DOE – Department of Energy, Philippines  
EAGER – East Asia Geoscience and Environmental Research  
EGAT – Electricity Generating Authority of Thailand  
EGS – EuroGeoSurveys  
EOS – Earth Observatory of Singapore  
ESCAP – Economic and Social Commission for Asia and the Pacific  
EU – European Union  
GAI – Geological Agency of Indonesia  
GDMR – General Department of Mineral Resources, Cambodia  
GETECH – Geophysical Exploration Technology  
GEUS – Geological Survey of Denmark and Greenland  
GIS – Geographic Information System  
GSC – Geological Survey of Canada  
GSI – Geoinformation Sharing Infrastructure  
GSJ – Geological Survey of Japan  
GTK – Geological Survey of Finland  
IGDP – Integrated Geophysical and Geochemical Data Processing  
Intermin – International Network of Raw Materials Training Centres  
IOC – Intergovernmental Oceanographic Commission  
IOMAC – Indian Ocean Marine Affairs Cooperation  
ISGeo – International School for Geoscience Resources, Republic of Korea  
IUGS – International Union of Geological Sciences  
JMG – Department of Mineral and Geoscience Malaysia  
K-CCUS – The Korea Organization Promoting for CCUS Development  
KES – Knowledge Enhancement and Sharing  
KIGAM – Republic of Korea Institute of Geoscience and Mineral Resources  
KNOC – Korean National Oil Company  
MC – Member Country  
MGB – Mines and Geoscience Bureau, Philippines  
MEMR – Ministry of Energy and Mineral Resources, Indonesia  
MLR – Ministry of Land and Resources, China  
MME – Ministry of Mines and Energy, Cambodia  
MONRE – Ministry of Natural Resources and Environment of Thailand, Vietnam  
PETRAD – Petroleum Management and Administration, Norway  
PTTEP – PTT Exploration and Production Public Company Limited  
SC – Steering Committee  
SEADPRI – Southeast Asia Disaster Prevention Research Initiative, Malaysia  
SPC – Pacific Community in the Pacific Islands and Territories  
UnCon – Unconventional Oil & Gas Project  
UKM – Universiti Kebangsaan Malaysia  
UN – United Nations  
UNECE - United Nations Economic Commission of Europe  
UNEP – United Nations Environment Programme  
UNESCO – United Nations Educational, Scientific and Cultural Organization  
UNFC – United Nations Framework Classification  
VIGMR – Vietnam Institute of Geosciences and Mineral Resources





# **CCOP ANNUAL REPORT 2021**