

# CCOP

## ANNUAL REPORT

### 2023

#### The 59<sup>th</sup> CCOP Annual Session

29 October - 2 November 2023

Avani+ Khao Lak Resort, Phang Nga, Thailand



CCOP Technical Secretariat

Email: [ccopts@ccop.or.th](mailto:ccopts@ccop.or.th)

Website: [www.ccop.asia](http://www.ccop.asia)





## ABBREVIATIONS

AG – ADVISORY GROUP	CHEMICAL DATA PROCESSING
AIST – NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY, JAPAN	IOC – INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
APGN – ASIA PACIFIC GEOPARKS NETWORK	IOMAC – INDIAN OCEAN MARINE AFFAIRS CO-OPERATION
ASCOPE – ASEAN COUNCIL ON PETROLEUM	ISGEO – INTERNATIONAL SCHOOL FOR GEOSCIENCE RESOURCES, REPUBLIC OF KOREA
ASEAN – ASSOCIATION OF SOUTHEAST ASIAN NATIONS	IUGS – INTERNATIONAL UNION OF GEOLOGICAL SCIENCES
ASOMM– THE ASEAN SENIOR OFFICIALS MEETING ON MINERALS	JMG – DEPARTMENT OF MINERAL AND GEO-SCIENCE MALAYSIA
BGR – FEDERAL INSTITUTE FOR GEOSCIENCES AND NATURAL RESOURCES, GERMANY	KIGAM – REPUBLIC OF KOREA INSTITUTE OF GEOSCIENCE AND MINERAL RESOURCES
BGS – BRITISH GEOLOGICAL SURVEY	MC – MEMBER COUNTRY
CC – COOPERATING COUNTRY	MGB – MINES AND GEOSCIENCE BUREAU, PHILIPPINES
CCOPTS – CCOP TECHNICAL SECRETARIAT	MEMR – MINISTRY OF ENERGY AND MINERAL RESOURCES, INDONESIA
CCS – CARBON CAPTURE AND STORAGE	MLR – MINISTRY OF LAND AND RESOURCES, CHINA
CCUS – CARBON CAPTURE, UTILISATION AND STORAGE	MME – MINISTRY OF MINES AND ENERGY, CAMBODIA
CGS – CHINA GEOLOGICAL SURVEY	MONRE – MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT OF THAILAND, VIETNAM
CO – COOPERATING ORGANISATION	PETRAD – PETROLEUM MANAGEMENT AND ADMINISTRATION, NORWAY
CPC – CIRCUM PACIFIC COUNCIL	SC – STEERING COMMITTEE
DENR – DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, PHILIPPINES	SEADPRI – SOUTHEAST ASIA DISASTER PREVENTION RESEARCH INITIATIVE, MALAYSIA
DGM – DEPARTMENT OF GEOLOGY AND MINERALS, LAO PDR	SPC – PACIFIC COMMUNITY IN THE PACIFIC ISLANDS AND TERRITORIES
DGSE – DEPARTMENT OF GEOLOGICAL SURVEY AND MINERAL EXPLORATION, MYANMAR	UKM – UNIVERSITI KEBANGSAAN MALAYSIA
DMR – DEPARTMENT OF MINERAL RESOURCES, THAILAND	UN – UNITED NATIONS
DOE – DEPARTMENT OF ENERGY, PHILIPPINES	UNECE - UNITED NATIONS ECONOMIC COMMISSION OF EUROPE
EAGER – EAST ASIA GEOSCIENCE AND ENVIRONMENTAL RESEARCH	UNEP – UNITED NATIONS ENVIRONMENT PROGRAMME
EGS – EUROGEOSURVEYS	UNESCO – UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION
EOS – EARTH OBSERVATORY OF SINGAPORE	UNFC – UNITED NATIONS FRAMEWORK CLASSIFICATION
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 INFRA-STRUCTURE	
GSJ – GEOLOGICAL SURVEY OF JAPAN	
GTK – GEOLOGICAL SURVEY OF FINLAND	
IGDP – INTEGRATED GEOPHYSICAL AND GEO-	

## MESSAGE FROM THE CHAIRPERSON

Dear friends,

First and foremost, as the Chairperson of the CCOP Steering Committee, I would like to express my sincere gratitude to the CCOP Steering Committee, Advisory Group, Technical Secretariat, and all friends from the CCOP Member Countries, Cooperating Countries and Cooperating Organizations. I am delighted and proud to present the CCOP Annual Report 2023, and to show the outstanding progress we have made in the past year in promoting the geoscience cooperation and the sustainable economic and social development in East and Southeast Asia.



In line with the goals of the international conventions including the UN's 2030 Agenda for Sustainable Development, the Sendai Framework and the Paris Agreement, CCOP has continued to support the sustainable management of national resources and environment and to promote the economic and social development in the region by advancing geosciences and providing geo-technical solutions. Under the guidance of the CCOP 2021-2025 Strategic Plan, we have fulfilled our responsibilities and worked earnestly to build bridges of communication and collaboration, and to enhance the beneficial and win-win cooperation among all CCOP family members.

In 2023, after experiencing the haze of the global pandemic, all the countries have been vigorously promoting comprehensive cooperation in the economic, social and scientific fields. During the past year, the CCOP family has worked in solidarity to have jointly undertaken 10 joint research projects and organized 12 online and offline seminars and workshops, covering such topics as urban geology, geohazards, CCUS, groundwater, marine geology, geoparks, and mineral resources. The CCOP Secretariat actively applied for the critical mineral project under the ASEAN-Korea Cooperation Fund and the Mekong groundwater sustainability project under the Adaptation Fund so as to further enhance cooperation ties among the CCOP members through pragmatic projects. Over 200 experts from the CCOP Member Countries received training through 8 training courses, and 14 new students were enrolled in the China-ASEAN Institute, which helped facilitate the geoscience capacity building in the region.

Dear colleagues, in 2023, the CCOP family has joined hands together to advance geoscience cooperation and achieved a series of fruitful results, which is very encouraging and worthy of congratulations! Confronted with the new situation and common challenges of regional development, we are committed to building a CCOP community with a shared future by further deepening exchanges and cooperation in collaborative projects in key fields, joint geoscience research, regional mining investment cooperation, geoscience data and information sharing, as well as geoscience personnel exchange and training, with a view to constantly expanding the breadth and depth of geoscience collaborative endeavors in the region.

2024 is the Year of the Dragon in the Chinese lunar calendar, and the dragon is a symbol of success in the Chinese culture. I am convinced that as long as we work in solidarity and forge ahead together, the CCOP geoscience cooperation will surely continue to inject strong impetus into regional development and benefit the people of the region!

Finally, I wish all of you happiness and good health in the new year of 2024!

Thank you!

A handwritten signature in black ink, consisting of stylized Chinese characters '李金发' (Li Jinfa).

**Dr. Li Jinfa**

Chairperson of CCOP Steering Committee  
Permanent Representative of China to CCOP  
Vice Minister for Geological Survey  
Ministry of Natural Resources, P.R. China  
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;

## **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.

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



#### **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:**

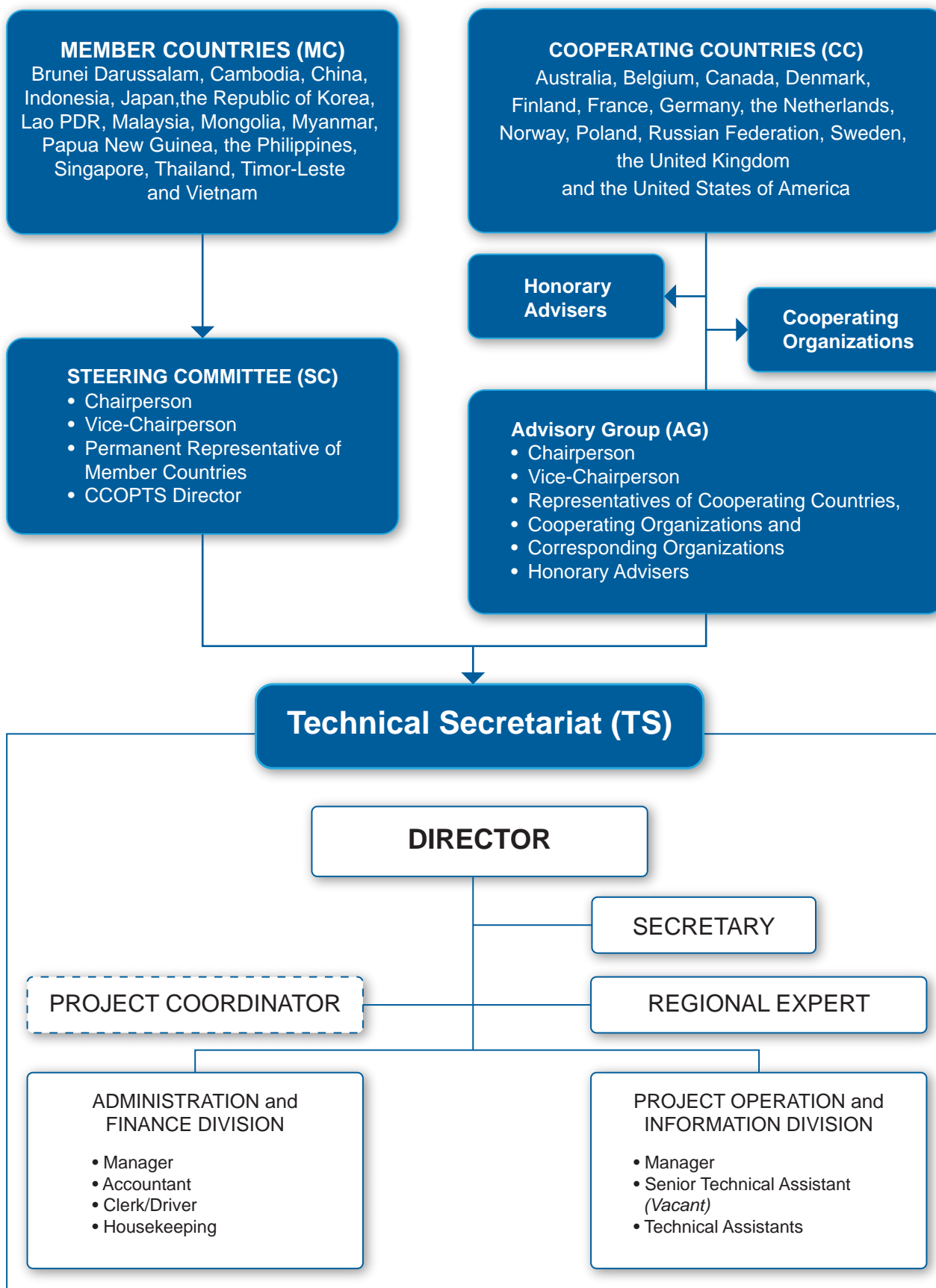
**CCOP also works closely with 14 Cooperating Countries (CCs):** Australia, Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, Poland, Russian Federation, Sweden, the United Kingdom and the United States of America.

#### **Cooperating Organizations:**

**There are 19 Cooperating Organizations (COs) throughout the world:**

ASCOPE, CIFEG, CPC, EUROGEOSURVEYS, GETECH, HANYANG UNIVERSITY, IERI/ GIST, IOC, IOMAC, IUGS, JICA, PETRAD, SPC, UNESCAP, UNEP, UNESCO, UKM, THE WORLD BANK and YES NETWORK.

## MANAGEMENT AND ORGANIZATION



As of 31 December 2023, the CCOP Technical Secretariat (TS) has 11 personnel, comprising three professionals, six supporting staff, one intern and one out-sourced staff.



### The newly appointment of Permanent Representatives of Member Country (MCs) to CCOP.

On 15 March 2023, **Mr. Soukansak SISOUK** has been appointed as Director General of Department of Geology and Minerals (DGM), Ministry of Energy and Mines succeeded **Mr. Keo Khamphavong** as Permanent Representative of Lao PDR to CCOP.

On 17 May 2023, **Mr. Zamri Bin Ramli**, Director General, Department of Mineral and Geoscience Malaysia succeeded **Ybrs. Tuan Haji Hisamuddin Bin Termidi** as Permanent Representative of Malaysia to CCOP.

On 25 July 2023, **H.E. Chea Channara**, Director General, General Department of Petroleum, Ministry of Mines and Energy succeeded **H.E. Mr. Cheap Sour** as Permanent Representative of Cambodia to CCOP.

On 31 August 2023, **Atty. Danilo U. Uykieng**, Officer-in-Charge, Director, Mines and Geosciences Bureau (MGB), Department of Environment and Natural Resources succeeded **Atty. Wilfredo G. Moncano** as Permanent Representative of Philippines to CCOP.

On 1 September 2023, **Dr. Muhammad Wafid A.N.** was appointed as Acting Head of Geological Agency of Indonesia, Ministry of Energy and Mineral Resources (MEMR) succeeded **Dr. Ir. Sugeng Mujiyanto, M.Sc., M.Env.Eng.Sc.**

On 1 October 2023, **Mr. Phichit Sombatmak** was appointed as Director-General of the Department of Mineral Resources (DMR), Ministry of Natural Resources and Environment succeeded **Dr. Oranuj Lorphensri** as Permanent Representative of Thailand to CCOP.

On 4 December 2023, **Dr. Se-Joon KIM** was appointed as new Vice President of Korea Institute of Geoscience and Mineral Resources (KIGAM) succeeded **Dr. SeHo Hwang** as Deputy Permanent Representative of the Republic of Korea to CCOP.

# *With Deepest Sympathy*



**Professor He Qixiang**

With deep regret and sorrow, We learned that our colleague Professor He Qixiang passed away on Sunday, January 1, 2023, at the age of 87. On behalf of the Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) we would like to extend the sincere condolences and deep sympathy to his family and China Geological Survey on this tragic and grave loss.

Professor He Qixiang devoted his life to geoscience research for more than 60 years. His research interests spanned theoretical sedimentology, applied sedimentology, marine geology and Quaternary geology. Professor He Qixiang served as the senior regional expert and lifelong honorary consultant of CCOP, and conducted the mapping projects of lithofacies, paleoenvironment and isothickness maps in different time divisions of Tertiary in East and Southeast Asia, which effectively promoted international cooperation in geosciences and raised scientific research level in East and Southeast Asia.

Having worked at several universities and academic organizations, Professor He Qixiang made outstanding contributions to the education of geoscientists. Professor He Qixiang also produced a large amount of scientific publications.

We would like to once again express our deep condolences on the tragic loss of Professor He Qixiang. Please convey our condolences and sympathy to his family members.

With Sincerely Sympathy  
CCOP Technical Secretariat

## HIGHLIGHTS FOR THE YEAR 2023

### The 80<sup>th</sup> CCOP Steering Committee Meeting

The 80<sup>th</sup> CCOP Steering Committee (SC) Meeting was convened at the Grand Josun Jeju Hotel in Jeju Island, Republic of Korea on 4-6 April 2023. It was hosted by the Korea Institute of Geoscience and Mineral Resources (KIGAM) in cooperation with the Ministry of Science and ICT, the Ministry of Trade Industry and Energy, and Jeju Special Self-Governing Province. The Meeting was attended by delegates of the following 14 Member Countries (MC): BRUNEI DARUSSALAM, CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALAYSIA, MONGOLIA, MYANMAR, PAPUA NEW GUINEA, PHILIPPINES, THAILAND and VIETNAM. Also present were Mr. Ioannis Abatzis and Dato' Yunus Abdul Razak, Chairperson and Vice-Chairperson of the CCOP Advisory Group (AG) respectively, as well as the Director and staff of the CCOP Technical Secretariat (CCOPTS).



## The 59<sup>th</sup> CCOP Annual Session

The 59<sup>th</sup> CCOP Annual Session was held at Avani+ Khao Lak Resort, Phang Nga, Thailand on 29 October to 2 November 2023. It was hosted by CCOP Technical Secretariat in cooperation with the Government of Thailand through the Department of Mineral Resources, Ministry of Natural Resources and Environment and other relevant Thai agencies.

The session was attended by **151 delegates** coming from 11-Member Countries (BRUNEI DARRUSSALUM, CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALASIA, MYANMAR, PHILIPPINES AND THILAND), 4-Cooperating Countries (DENMARK, FINLAND, POLAND, AND UNITED KINGDOM), 4-Cooperating Organization (EuroGeoSurveys, Hanyang University, IUGS, and UKM), Observer (KHAN) as well as 2-Honorary Advisers of CCOP and staff of the CCOP Technical Secretariat.



The CCOP Thematic Session, which was held on 1 November 2023, with a theme of “*Action for Future: Advancing Geoscience Sustainable Development in the East and Southeast Asia*”. Three sub-themes were as follows:

- Climate change and disaster risk reduction
- Sustainable Energy and critical resource management
- Digital transformation and innovation

Over 100 geologists from CCOP member countries and cooperating countries actively participated in the three parallel sessions, of which 47 speakers gave presentations on the latest research achievements in the region.



### The 81<sup>st</sup> CCOP Steering Committee Meeting

The 81<sup>st</sup> CCOP Steering Committee Meeting was hosted by CCOP Technical Secretariat at Avani+ Khao Lak Resort, Phang Nga, Thailand on 3 November 2023.

The Meeting was attended by **43 delegates** from 11 Member Countries (MC): BRUNEI DARRUSSALUM, CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALASIA, MYANMAR, PHILIPPINES AND THILAND). Also present were **Mr. Ioannis Abatzis**, Chairperson of the CCOP Advisory Group, **Dato Yunus Abdul Razak**, Vice-Chairperson of the CCOP Advisory Group, and the Director and staff of the CCOP Technical Secretariat (CCOPTS).

The 81<sup>st</sup> CCOP Steering Committee Meeting approved the proposed workplan for 2024 and new initiatives of the Research Center on Urban Geology (RCUG) “CCOP-RCUG-YLL International Program: Sustainability of Recourse-based Region”. Meeting approved to have following CCOP meeting:

- The 82<sup>nd</sup> Steering Committee Meeting will be held from the 3<sup>rd</sup> of March until 8<sup>th</sup> March 2024 in Siem Reap, Cambodia.
- The 59<sup>th</sup> Annual session, it will be held from 3<sup>rd</sup> to 8<sup>th</sup> of November 2024 in Langkawi, Malaysia.
- The 84<sup>th</sup> CCOP Steering Committee Meeting in March/April 2025, Vietnam.
- The 61<sup>st</sup> CCOP Annual Session & the 85<sup>th</sup> CCOP SC Meeting in 2025 at Vientiane, Lao PDR.



The 81<sup>st</sup> CCOP Steering Committee Meeting held on 3 November 2023 in Khao Lak, Phang Nga Thailand selected **Dr. Shinsuke Nakao**, Permanent Representative of Japan to CCOP, Director-General of the Geological Survey of Japan, as the new Chairperson of CCOP Steering Committee and **Datuk Zamri Bin Ramli**, Permanent Representative of Malaysia to CCOP, Director General, Department of Mineral and Geoscience Malaysia as the new Vice Chairperson of CCOP Steering Committee for the term 1 January 2024 to 31 December 2025. The Meeting applauded **Dr. Li Jinfa** for his admirable services and contribution to CCOP as Chairperson of the CCOP Steering Committee from October 2021.



**Dr. Li Jinfa**

Chairperson of the CCOP Steering Committee from October 2021



**Dr. Shinsuke Nakao**

New Chairperson of CCOP Steering Committee



**Datuk Zamri Bin Ramli**

New Vice Chairperson of CCOP Steering Committee

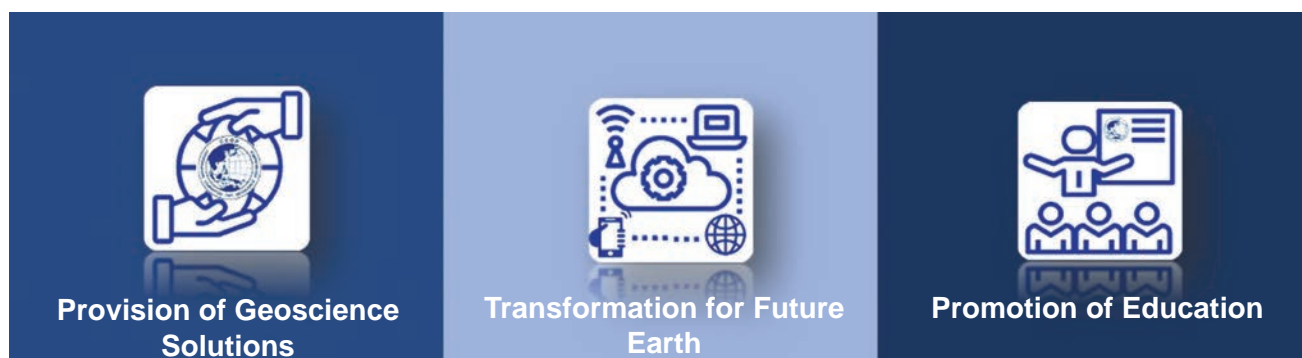
**Japan International Cooperation Agency (JICA)** was accepted as CCOP Cooperating Organization by the 81<sup>st</sup> CCOP Steering Committee Meeting held on 3 November 2023 in Khao Lak, Phang Nga Thailand.



# CCOPTS COURTESY VISITS



## TECHNICAL PROGRAMMES AND ACTIVITIES



**Provision of Geoscience Solutions**

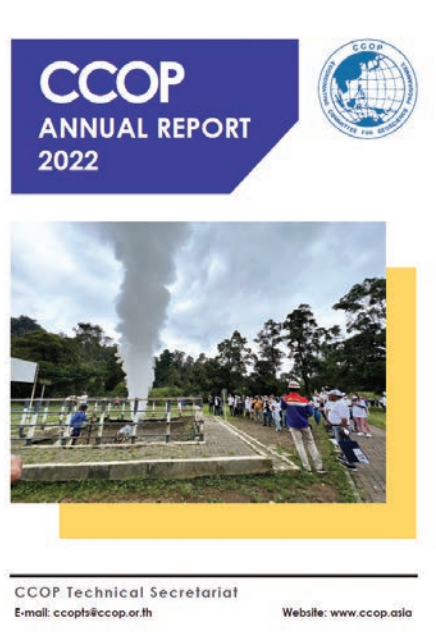
**Transformation for Future Earth**

**Promotion of Education**

DATE/VENUE	ACTIVITY
<b>6-10 Feb 2023</b> <i>Thailand</i>	CCOP and Soda System Inc visited the Department of Groundwater, Thailand, and together installed the groundwater monitoring system in Nakhon Phanom and Nong Khai provinces.
<b>8-17 Feb 2023</b> <i>Bangkok &amp; Hanoi</i>	GeoSample and Analysis Data Repository System (CCOP-GADR) Technology Transfer to Vietnam Geological Department
<b>1 Mar 2023</b>	CCOP-KIGAM Groundwater Online Meeting with GDMR on Preparation of Automatic Monitoring System Installation in Cambodia
<b>1-3 Mar 2023</b> <i>Bangkok, Thailand</i>	CCUS Prospects and Technologies at the International Petroleum Technology Conference (IPTC)
<b>6-8 Mar 2023</b> <i>Jakarta, Indonesia</i>	The 12 <sup>th</sup> Liaison Officials' Meeting of the CAMCF 2023
<b>21-22 Mar 2023</b> <i>Bangkok, Thailand</i>	CCOP-GSJ-DGR Groundwater Project Phase IV Meeting
<b>27-28 Mar 2023</b> <i>Online</i>	The 7 <sup>th</sup> International Workshop on CCOP Geoinformation Sharing Infrastructure for East and Southeast Asia (GSi) Project
<b>27-30 Mar 2023</b>	10 <sup>th</sup> Asia-Pacific Forum on Sustainable Development (APFSD)
<b>3-6 Apr 2023</b> <i>Jeju Island, Republic of Korea</i>	The 80 <sup>th</sup> CCOP Steering Committee Meeting
<b>21 Apr 2023</b> <i>Online</i>	CCOP-KIGAM Groundwater Online Meeting with NAWAPI on Preparation of Monitoring System Installation in Vietnam
<b>24-27 Apr 2023</b> <i>Kampong Cham and Stung Treng, Cambodia</i>	CCOP-KIGAM Groundwater monitoring system installation in Cambodia
<b>25-28 Apr 2023</b> <i>Geneva, Switzerland</i>	The UNECE Resource Management Week 2023 and the 14 <sup>th</sup> session of the Expert Group on Resource Management (EGRM-14)
<b>3 May 2023</b> <i>Online</i>	CCOP-KIGAM Groundwater Meeting with DWR on CCOP-KIGAM Groundwater Project workshop in Lao PDR 2023
<b>15-16 May 2023</b> <i>Bangkok, Thailand</i>	Southeast Asia CCS Accelerator (SEACA) First Workshop
<b>15-19 May 2023</b> <i>Bangkok, Thailand</i>	Seventy-ninth session of the Economic and Social Commission for Asia and the Pacific
<b>16-29 May 2023</b> <i>Nanning, Chongqing Guilin, China</i>	International Training Course on Sustainable Utilization of Natural Resources in Karst Areas (I): Remote Sensing and Monitoring
<b>18-20 May 2023</b> <i>Nanning, China</i>	12 <sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition
<b>6-8 Jun 2023</b> <i>Davao, the Philippines</i>	3 <sup>rd</sup> CCOP-KIGAM Urban Geology Workshop

DATE/VENUE	ACTIVITY
<b>12-16 Jun 2023</b> <i>Vinh Long, Dong Thap Vietnam</i>	CCOP-KIGAM Groundwater monitoring system installation in Vietnam
<b>19-20 Jun 2023</b> <i>Vientiane, Lao PDR</i>	CCOP-KIGAM Groundwater monitoring site visiting in Lao PDR
<b>18-24 Jun 2023</b> <i>Daejeon, Republic of Korea</i>	IS-Geo face-to-face regular training course on 'Geoparks 2023: understanding the values of geo-heritages with field excursions
<b>24-29 June 2023</b> <i>Busan, Republic of Korea</i>	Geo AI Data Academic Society Meeting 2023 Spring Conference
<b>3-6 Jul 2023</b> <i>Phnom Penh, Cambodia</i>	GeoSample and Analysis Data Repository System (CCOP-GADR) Technology Transfer to Cambodia
<b>27 Jul 2023</b> <i>Bangkok, Thailand</i>	Meeting with Geological Society of Thailand and Department of Mineral Fuels on collaboration proposal for Joint Research on Thailand Gas Field Status
<b>8-12 Aug 2023</b> <i>Brunei Darussalam</i>	Official CCOPTS Courtesy Visits in Brunei Darussalam
<b>5-7 Sept 2023</b> <i>Online</i>	GeoThai 2023
<b>12 Sept 2023</b> <i>Online</i>	10 <sup>th</sup> Joint Working Groups Meeting of the ASEAN Minerals Cooperation (JWG)
<b>13 Sept 2023</b> <i>Hanoi, Vietnam</i>	Courtesy visits at the Permanent Representative of Vietnam's Office
<b>13-14 Sept 2023</b> <i>Hanoi, Vietnam</i>	CCOP-KIGAM Geoscience Data Repository (GDR) Project, Fourth Working Group Meeting/Workshop
<b>26 Sept 2023</b> <i>Bangkok, Thailand</i>	Meeting with Chengdu Center, China Geological Survey on Geoscience Big Data Cooperation
<b>2-4 Oct 2023</b> <i>Vientiane Lao PDR</i>	CCOP-KIGAM Groundwater monitoring system installation in Lao PDR
<b>18-20 Oct 2023</b> <i>Shanghai, China</i>	Energy China Forum 2023 13 <sup>th</sup> Asia-Pacific Shale & Unconventional Resources Conference
<b>23-25 Oct 2023</b> <i>Bangkok, Thailand</i>	International Forum on Climate Adaptation (IFOCA) 2023 "Advancing Climate Technologies for Carbon-Neutral Society amidst the Climate Crisis through Collaboration"
<b>30 Oct-4 Nov 2023</b> <i>Bangkok, Thailand</i>	The 59 <sup>th</sup> CCOP Annual Session and the 81 <sup>st</sup> CCOP Steering Committee Meeting
<b>20-21 Nov 2023</b> <i>Jakarta, Indonesia</i>	2 <sup>nd</sup> Southeast Asia CCS Accelerator (SEACA) Workshop
<b>22-23 Nov 2023</b> <i>Phnom Penh, Cambodia</i>	ASOMM Meeting
<b>23-24 Nov 2023</b> <i>Chiang Mai, Thailand</i>	The 9 <sup>th</sup> International Conference on Applied Geophysics
<b>27 Nov 2023</b> <i>Online</i>	2023 KOREA MOFA Energy International Organization Intern Online Meeting
<b>8-11 Dec 2023</b> <i>Wenzhou, China</i>	The 2023 International Symposium on Resilient Cities & The 23 <sup>rd</sup> Annual General Meeting of UK-CARE

## PUBLICATIONS



### CCOP Annual Report 2022

The CCOP Annual Report is available both in printed and digital formats. 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>.



### Thai Geoscience Journal

Vol.3 No. 5 January 2023 and Vol.4 No. 6 July 2023

Published by Department of Mineral Resources, Geological Society of Thailand  
In cooperation with CCOP Thematic Session 2023

## COOPERATION AND PARTNERSHIP

COUNTRY	CCOP TECHNICAL ACTIVITIES
<b>1) Member Countries</b>	
<b>China</b>	<p>CGS support the following:</p> <ul style="list-style-type: none"> <li>• Secretariat of the CCOP Research Centre on Urban Geology (CCOP – RCUG)</li> <li>• Technical Workshop of CCOP – RCUG</li> <li>• Integrated Geoscience Data Processing project (IGDP)</li> </ul>
<b>Japan</b>	<p>GSJ continues to financially and technical support the following projects:</p> <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>	<p>KIGAM support financially and technically the following projects:</p> <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> <li>• KIGAM IS-Geo Training Programmes</li> <li>• KIGAM-KHAN Project</li> </ul>
<b>Thailand</b>	<p>DMR continues to support the Permanent Office Building for CCOPTS in DMR Complex, Bangkok, Thailand.</p>
<b>2) Cooperating Countries</b>	
<b>United States of America</b>	<p>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.</p> <p>One grant was awarded at the 59<sup>th</sup> CCOP Annual Session held on 29 October – 2 November 2023, Phang Nga, Thailand</p>
<b>3) Cooperating Organizations</b>	
<b>IUGS</b>	Deep-time Digital Earth (DDE)
<b>Hanyang University</b>	Global Energy Technology Policy Professionals Program

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

**OBJECTIVE 1: To promote work on geohazards, disaster, environment & climate change adaptation**

### CCUS Prospects and Technologies at the International Petroleum Technology Conference (IPTC)

CCOP together with DDE organized Panel Session 42 on CCUS Prospects and Technologies at the International Petroleum Technology Conference (IPTC), on 1-3 March 2023 at the Centara Grand & Bangkok Convention Center in Bangkok, Thailand under the theme “Balancing the Energy Landscape through Innovation and Sustainability”. More than 4,000 delegates from over 50 countries participated in the event. The session had feature speakers/case studies from CCOP and Deep-time Digital Earth nation members around the SEA region on planning, monitoring, simulating CCUS through data and machine learning to support Net-Zero Goals. Director of CCOP Technical Secretariat, **Dr. Young Joo LEE**, together with **Ms. Susan Nash**, AAPG and Deep-time Digital were Session Co-chairs.



In Southeast Asia, at least seven large-scale Carbon Capture, Utilization and Storage CCUS projects have been identified and are in the early stages of planning, including several associated with energy storage from offshore natural gas processing. Despite the importance of CCUS in reaching net zero, efforts that have been made to integrate global studies in geological CO<sub>2</sub> storage for example those of the Global Institute for CCS and the IEA Greenhouse Gas programme have fallen short. Many nations do not have data on their geological CO<sub>2</sub> storage potential and calculations for storage capacity have been made at varying scales and with varying levels of detail, with different standards. Therefore, there is a requirement to develop some of the primary geological and palaeogeographical

data for sedimentary CCS basins globally and then to develop consistent standards of CCS storage estimation, to compile and make data available to AI and ML, to curate CCS geological data worldwide, and to research and map CCS storage in underdeveloped CCS areas.

This Ask the Expert Session on ‘Accelerating CCUS through Data and Machine Learning to Support Net-Zero Goals’ brings together key geoinformatics and geological scientists from CCOP, DDE and elsewhere, as well as CCS, AI and ML specialists. The session discussed the role that global geoinformatics initiatives have in the future improving global understanding of the prospectivity of basins for CCS and measuring the contribution of CCS against the task of decarbonisation and net zero. Representatives of DDE, CCOP, and AAPG discuss how CCUS can be implemented in Southeast Asia and the analytical modelling processes needed to do so.

### **10<sup>th</sup> Asia-Pacific Forum on Sustainable Development (APFSD)**

The 10<sup>th</sup> APFSD organized from 27-30 March 2023 under the theme “Accelerating the recovery from the coronavirus disease (COVID-19) and the full implementation of the 2030 Agenda for Sustainable Development at all levels in Asia and the Pacific” in Bangkok, at the United Nations Conference Center (UNCC).

In alignment with the focus of the 2023 HLPF, the Forum assesses progress on the SDGs under review: Goal 6 (Clean water and sanitation); Goal 7 (Affordable and clean energy); Goal 9 (Industry, innovation, and infrastructure); Goal 11 (Sustainable cities and communities) and Goal 17 (Partnership for the Goals). The Forum also supports the presentation of Voluntary National Reviews (VNRs) for the 2023 HLPF. Additionally, the APFSD feed into the 2023 SDG Summit by providing a regional platform to comprehensively review progress at the mid-point of the implementation of the 2030 Agenda and identify priorities and solutions for accelerating the implementation of the SDGs in the remaining years to 2030.



### 1<sup>st</sup> Southeast Asia CCS Accelerator (SEACA) Workshop

On 15 May 2023, SEACA is an initiative of the Global CCS Institute. It serves as collaborative platform between governments and its relevant agencies, multilateral organisations and the private sector, including Carbon Capture & Storage (CCS) project developers and proponents, CCS-relevant industries (e.g., steel, cement, petrochemical, energy), oil and gas exploration and production companies, and governments of developed economies with interests in CCS in ASEAN. SEACA aims to accelerate the commercial deploy.

**Dr. Young Joo LEE**, Director of CCOPTS was invited to be one of the panelists, for the panel discussion on issues, opportunities and barriers for storage pillar. Important point under this discussion is the need for public-private partnership and collaboration towards achieving the objectives of SEACA initiative. CCOPTS Regional Expert **Dr. Songyang Wu**, and Project Operation and Information Manager, **Ms. Marivic Pulvera Uzarraga** also attended this workshop.



## Southeast East Asia CCS Accelerator Workshop #2

The Southeast Asia CCS Accelerator (SEACA) is an initiative of the Global CCS Institute. It serves as a collaborative platform between governments and its relevant agencies, multilateral organizations, and the private sector, including Carbon Capture and storage (CCS) project developers and proponents, CCS-relevant industries (e.g., steel, cement, petrochemical, and energy), oil and gas exploration and production companies, and governments of developed economies with interests in CCS in ASEAN.

SEACA aims to accelerate the commercial deployment of CCS in ASEAN as an essential component of the region's efforts to deliver an energy transition and mitigate climate change. As the output of SEACA in its first year of implementation, the Global CCS Institute and ASEAN Centre for Energy are organising three (3) workshops that will support and cover the three (3) critical pillars of SEACA, namely, CCS Regulation, Enabling Policy & Geological Storage Resource Development.

The 2<sup>nd</sup> SEACA Workshop was held physically on 20 and 21 November 2023 in Tangerang (near Jakarta), Indonesia and was co-organised by the Global CCS Institute, ASEAN Centre for Energy (ACE), and Asia Natural Gas and Energy Association (ANGEA). The Workshop was hosted by the Directorate General of Oil and Gas, Ministry of Energy and Mineral Resources of Indonesia.



The 2<sup>nd</sup> SEACA Workshop was attended by representatives of six ASEAN Member States (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, and Thailand) and Timor Leste. These representatives came from various sectors, including government, regulatory authorities, and state-owned companies. Additionally, invited participants from other government entities, industries, universities, consulting firms, etc. also participated, including CCOP.



**Mr. Alex Zapantis**, General Manager Commercial, Global CCS Institute, shared the summary of the first SEACA Workshop, which has the following results:

- a) There are critical issues in the policy area, particularly in investment, there are gaps in policy to attract investors, such as carbon pricing and trans-border movement for storage.
- b) On the regulation pillar, the issue is there are gaps in specific regulations for CCS.
- c) Potential actions: public understanding of CCS, roadmap of CCS in the ASEAN region, and building knowledge in regulating CCS

Presentations were delivered under three sessions: 1) Southeast Asian Government Perspectives; 2) CCS Project Developer, Contributor, Financier Perspectives and 3) Transboundary Movement of CO<sub>2</sub>.

Group discussions were carried out on two topics, 1) Geological Storage Development - focused on geological storage resource development in Southeast Asia, and 2) Policy & Regulation - focused on policy, economics and regulation related to CCS in Southeast Asia. CCOP participated in the discussion on geological storage development which was led by Chris Consoli and Aishah Hatta of GCCSI. CCOP Member Countries represented in the discussion were Indonesia (LEMIGAS, etc.), Japan (Private Sector), Korea (Private Sector) Malaysia (Private Sector), Singapore (Private Sector), Philippines (PNOC), Timor-Leste (Petroleum Ministry) and Thailand (DMF). Other CCOP Member Countries (Brunei Darussalam, Cambodia, and Lao PDR) present at the workshop attended the regulation and policy discussion.

### Geological Storage Development Discussion

The Geological Storage Development discussion concluded that the region boasts multiple potentially suitable storage basins, yet the precise location and storage resources of saline formations remain unknown. Current resource estimates surpass the required capacity, but there is a lack of transparency in their details—such as location, methodology, and data sources. The majority of CCS activities in the region are concentrated around oil and gas fields, limiting the diversification of storage sites. Furthermore, access to relevant data is severely restricted, with a scarcity of open information in publications, government and survey reports, and industry databases. Addressing these issues is crucial for the successful implementation and expansion of CCS initiatives in Southeast Asia, necessitating increased transparency, diversified storage sites, and improved accessibility to data for stakeholders and the public alike.

The participants agreed to the establishment of the SEA Storage Working Group. This group aims to address the critical issue of the absence of a standardized methodology for calculating storage resources and the lack of a comprehensive database showcasing the storage potential in Southeast

Asia that not only impedes a complete understanding of the region's capabilities but also acts as a barrier to attracting investors, financiers, and project developers interested in carbon capture and storage (CCS) initiatives in Southeast Asia.

The CCS Roadmap for Countries was presented with four main phases in CCS deployment, which include the Understand, Define, Execute, and Iterate phases. The discussion included identification of the pain points and the current phase of each country in Southeast Asia.

The main pain point at the Understand phase is engaging with politicians at the beginning of the project rather than during the execution, which was deemed important. Aligning with politicians at an early stage would increase their understanding and support for the carbon capture and storage projects.

The lack of standardized methodology for screening potential CCS projects is identified as a common issue across countries. The need for consistent approaches to understanding subsurface conditions and resource calculations is emphasized. The participants agreed that this will be tackled with the proposed SEA Storage Working Group.

The Philippines, Timor Leste, Brunei, Lao PDR, Myanmar and Cambodia acknowledged their position in the early stage of CCS development i.e., Understand Phase. Limited data on reservoirs and the absence of a regulatory framework pose challenges.

Indonesia, Malaysia, Thailand, Vietnam, Singapore, Japan and South Korea are in Define phase with the focus in on establishing the policy and regulatory framework, cost-benefit analysis and financial incentives.



## International Forum on Climate Adaptation (IFOCA) 2023 “Advancing Climate Technologies for Carbon-Neutral Society amidst the Climate Crisis through Collaboration”

International Environmental Research Institute (IERI), Gwangju Institute of Science and Technology (GIST) together with Environmental Research Institute, Chulalongkorn University was organized International Forum on Climate Adaptation 2023 (IFOCA 2023) “Advancing Climate Technologies for Carbon-Neutral Society amidst the Climate Crisis through Collaboration”, 23-25 October 2023 at Sukhumvit 3-4 Hall on the 8<sup>th</sup> floor, Carlton Hotel Bangkok Sukhumvit, Bangkok, Thailand. This collaborative effort aims to find effective solutions that promote long-term environmental and social well-being. Several sessions were the Special Session: GIST Climate Technologies and GRI-IERI Research Project, Session I. International Collaboration for Sustainable Society, Session II. Innovations in Climate Technologies, Session III. Environmental Impacts and Session IV. Net Zero Transition.

On 24 October 2023, **Dr. Young Joo LEE** was invited to be one of the speakers and gave presentation on title “Activities of CCOP to Cope with the Global Climate Crisis” in Session I: International Collaboration for Sustainable Society.



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

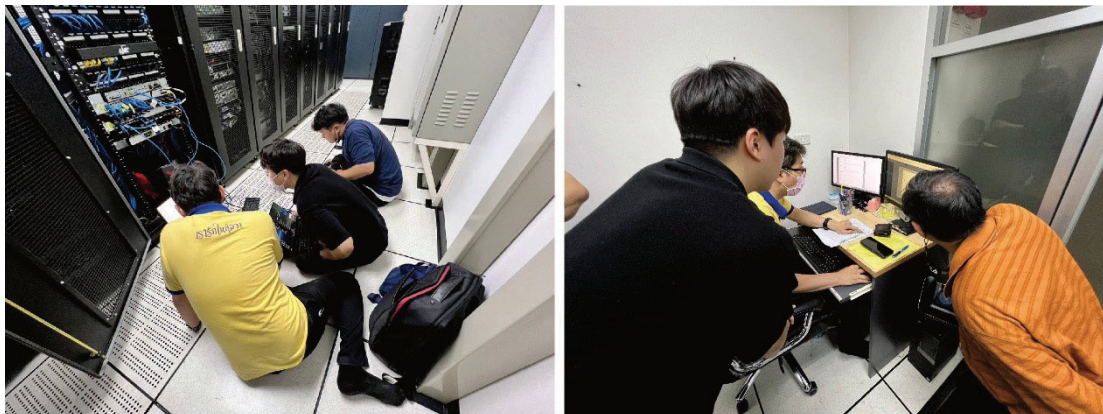
**OBJECTIVE 2 : To promote work on sustainable geo-resources management.**

### Groundwater Monitoring System Successful Installation in Thailand

The CCOP-KIGAM Groundwater Project aims to provide governments and organizations with the most up-to-date data on the Mekong River. As the critical outcome of the CCOP-KIGAM Groundwater Project in 2023, the groundwater monitoring system has been successfully installed in two wells in Thailand, which has been met with positive feedback from the Department of Groundwater of Thailand.

On 6<sup>th</sup>-10<sup>th</sup> Feb, CCOP and Soda System Inc visited the Department of Groundwater, Thailand, and together installed the groundwater monitoring system in Nakhon Phanom and Nong Khai provinces. The activity was attended by: CCOP Technical Secretariat, **Dr. Songyang Wu**, Regional Expert and **Ms. Thanitnunth Invakul**, Technical Assistant, **Soda System Inc., Republic of Korea**, **Mr. Jinhwi Lim**, Project Manager, **Mr. Jonghyeon Lee**, Technical Expert, **Mr. Kihyun Kim**, Technical Expert, Department of Groundwater, Thailand, **Dr. Tussanee Nettasana**, Senior Geologist, **Mr. Thatree Intharasut**, Plan and Policy Analyst, **Ms. Pattra Khaiman**, Plan and Policy Analyst and **Ms. Nattida Samhong**, Geologist.

On 6<sup>th</sup> February, SODA technicians arrived at the Department of Groundwater headquarters in Bangkok to set up the data server for their monitoring devices.



Data server setup in the Department of Groundwater headquarters, Bangkok, Thailand

Over the next two days, the team successfully installed the monitoring equipment in the Northern provinces of Nakhon Phanom and Nong Khai. The successful installation was met with high praise from the Department of Groundwater, and SODA was recognized for their efforts.



Groundwater monitoring system installation in Nakhon Phanom province, NW Thailand



Groundwater monitoring system installation in Nong Khai province, North Thailand

On 9 February 2023, CCOP together with SODA had a meeting in the DGR regional office at Udon Thani to introduce the primary usage of their monitoring platform and to discuss any necessary optimizations. **Dr. Songyang Wu**, the regional expert expressed appreciation to DGR and SODA Company for their dedication to this project. The meeting was well-proceeded, and SODA received positive feedback on their monitoring equipment and platform performance. SODA is committed to providing training and support to ensure that their monitoring solutions are used to their full potential. SODA will continue to provide maintenance and support for their monitoring equipment and platform, ensuring that the Thai government has access to the most up-to-date data on groundwater information in these two wells.



Groundwater monitoring system installation in Nong Khai province, North Thailand

The successful installation of groundwater monitoring equipment in Thailand is a significant milestone in the CCOP-KIGAM Groundwater Project, highlights the importance of the CCOP-KIGAM Groundwater Project in this initiative and demonstrates the project's commitment to providing solutions to governments and organizations. After the installation of monitoring equipment, the Thai government now has two more access to real-time data on groundwater, which will help them make informed decisions about water usage and management in the region. With the project's continued success, CCOP and KIGAM will continue to play a leading role in promoting sustainability and responsible resource management.



### CCOP-KIGAM Groundwater Online Meeting with GDMR on Preparation of Automatic Monitoring System Installation in Cambodia

On 1 March 2023, 13:30 – 14:30, Bangkok Time, CCOP Technical Secretariat, KIGAM and the General Department of Mineral Resource (GDMR), Ministry of Mine and Energy (MME) had an online meeting via Zoom Application. The purpose of this meeting is to discuss all the necessary preparations that need to be made before starting the installation of the groundwater automatic monitoring system in Cambodia.



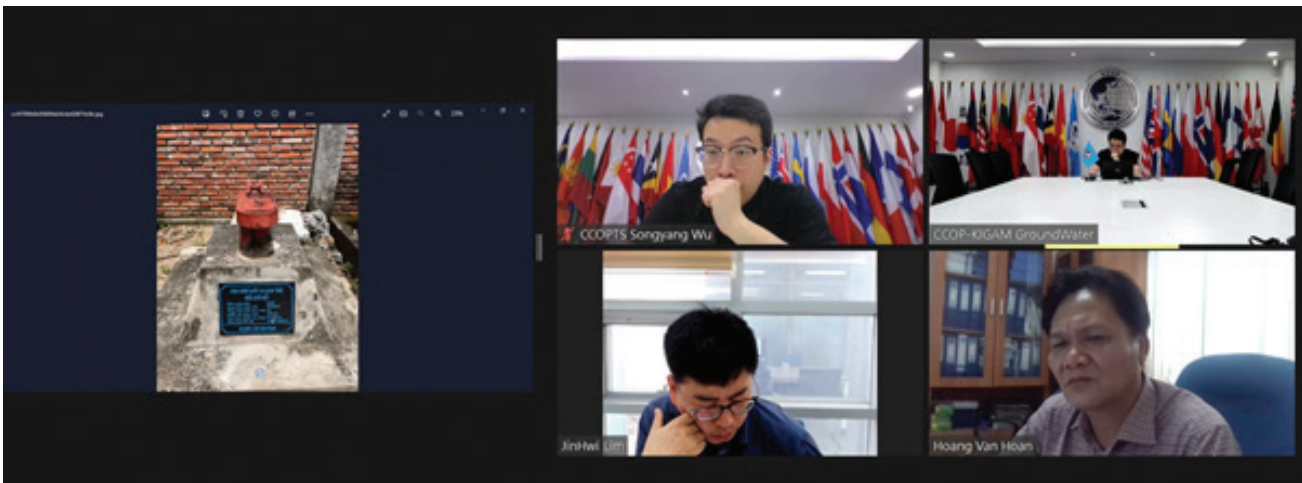
The meeting was attended by: CCOP Technical Secretariat, **Dr. Young Joo LEE**, Director, **Dr. Songyang Wu**, Regional Expert and **Ms. Marivic Pulvera Uzarraga**, Manager, Project Operation & Information. Korea Institute of Geoscience and Mineral Resources (KIGAM), **Dr. Eunhee Lee**, Senior Research Scientist, Groundwater Department. Soda System Inc., Republic of Korea, **Mr. Jinhwi Lim**, Technical Expert and General Department of Mineral Resource, Ministry of Mine and Energy, Cambodia, **Ms. Yang Virinrath**, Director, Department of Mineral Geology and **Mr. Sambo Heng**, Geologist, Department of Mineral Geology.

Details include network system, PC data server, shipment for equipment with tax exemption, system operating and training, system maintenance, etc. All sides satisfied the consensus of the discussion. The groundwater automatic system in Cambodia will be finalized in April 2023.

## CCOP-KIGAM Groundwater Online Meeting with NAWAPI on Preparation of Automatic Monitoring System Installation in Vietnam

On 21 April 2023, 9:00 – 10:00, Bangkok Time, CCOP Technical Secretariat, KIGAM, Soda Sys. and National Center for Water Resources Planning and Investigation, Vietnam (NAWAPI) had an online meeting via Zoom Application. The purpose of this meeting is to discuss all the necessary preparations that need to be made before starting the installation of the groundwater automatic monitoring system in Vietnam.

NAWAPI informed that all the system equipment is in the Ho Chi Minh regional office. Other details include network system, PC data server, system operating and training, system maintenance, etc. were introduced and discussed during the meeting. All sides consensuses that the groundwater automatic system in Cambodia will be finalized in June 2023.



## CCOP-KIGAM Groundwater monitoring system installation in Kampong Cham and Stung Treng, Cambodia

On 24-27 April 2023, CCOP, KIGAM and Soda System Inc visited the General Department of Mineral Resource, Ministry of Mine and Energy, Cambodia, and together installed the groundwater monitoring system in Kampong Cham province and Stung Treng province, Cambodia. The mission was attended and supported by CCOP Technical Secretariat, **Dr. Songyang Wu**, Regional Expert, Korea Institute of Geoscience and Mineral Resources, **Dr. Eunhee Lee**, Senior Research Scientist, Groundwater Department, Soda System Inc., Republic of Korea, **Mr. Jinhwi Lim**, Project Manager, and General Department of Mineral Resource, Ministry of Mine and Energy, Cambodia, **Ms. Yang Virinrath**, Director, Department of Mineral Geology, **Mr. Ear Unsovath**, Deputy Director, Department of Mineral Geology, **Mr. Lim Pagna**, Geologist, Department of Mineral Geology, **Mr. Ay Yean**, Geologist, Department of Mineral Geology and **Mr. Heng Sambo**, Geologist, Department of Mineral Geology.

On 24 April 2023, the team arrived at the General Department of Mineral Resource headquarters in Phnom Penh and paid a courtesy visit to **H.E. Mr. Ung Dipola**, Director General, General Department of Mineral Resource, and expressed the appreciation from KIGAM and CCOP for strong support from Cambodia. Soda System checked the PC and network settings and finalized the data server for their monitoring devices in the GDMR office.



Courtesy visit to **H.E. Mr. Ung Dipola** and Data server checking in the General Department of Mineral Resource, Phnom Penh, Cambodia

After three days of working, the team successfully installed the monitoring equipment in the Kampong Cham province and Stung Treng province. The two wells are located in the regional office of the General Department of Mineral Resource.



Groundwater monitoring system installation in Kampong in Cham Province, Cambodia

Groundwater monitoring system installation in tung Treng Province, Cambodia

On 27 April 2023, the team provided a training course on the primary usage of the CCOP-KIGAM Groundwater Monitoring Platform in the General Department of Mineral Resource headquarters and discussed the data accessing and comparison with the existing data. SODA is committed to providing training and continues to provide maintenance and support for their monitoring equipment and platform, to ensure that the monitoring system is well functioning.



Training and discussion on the primary usage of the CCOP-KIGAM Groundwater Monitoring Platform

The successful installation of groundwater monitoring equipment in Cambodia is the second country, which completed the work plan. After the installation of monitoring equipment, the Cambodian government now has two more access to real-time data on groundwater, which will help them monitor the Mekong River groundwater's important indicator and promote sustainability and groundwater resource management in a proper way.

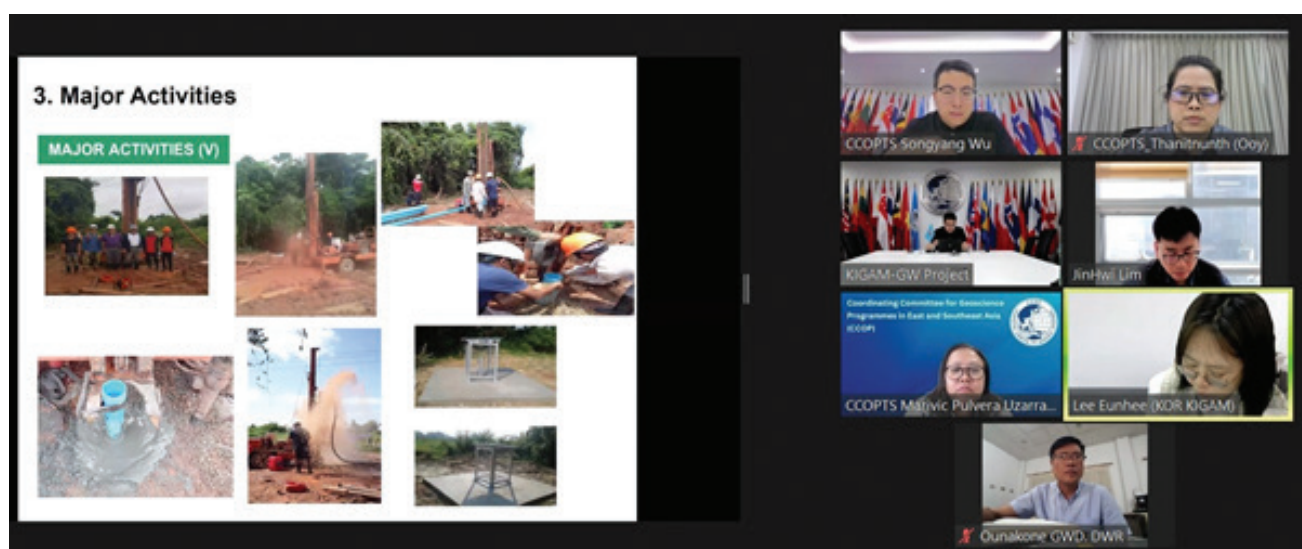


### CCOP-KIGAM Groundwater Online Meeting with DWR on CCOP-KIGAM Groundwater Project workshop in Lao PDR 2023

On 3 May 2023, 13:00 – 14:30, Bangkok Time, CCOP Technical Secretariat, KIGAM, Soda System, and Department of Water Resources, Lao PDR had an online meeting via Zoom Application. The purpose of this virtual meeting is to discuss the 2023 project work plan in Lao PDR, based on our solid previous work basis in 2021 and 2022, including the site selection for the well and monitoring system.

**Dr. Songyang Wu** introduced each participant to the meeting and the purpose of the meeting. **Dr. Eunhee Lee** gave an introduction of CCOP-KIGAM Groundwater Project Progress and major activities related to Lao PDR.

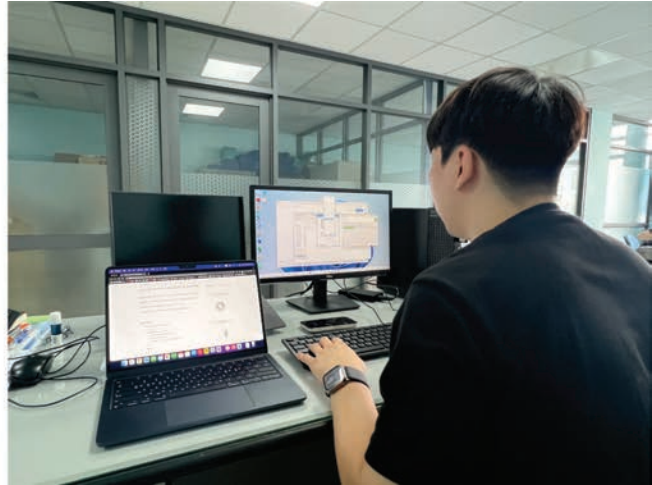
Based on the updated condition of two existing wells by Mr. **Ounakone Xayviliya**, the meeting agreed on the scheduled proposal to visit Lao PDR two times, the first period is on 19-20 June 2023 to observe the selection well and discuss the installation of the automatic monitoring system in person. Second period, September 2023 to install the automatic monitoring system.



### CCOP-KIGAM Groundwater monitoring system installation in Vinh Long Province and Dong Thap Province, Vietnam

On 12-16 June 2023, CCOP, KIGAM and Soda System Inc visited the National Center for Water Resources Planning and Investigation (NAWAPI) Southern Division, and jointly installed the groundwater monitoring system in Vinh Long province and Dong Thap province. **Dr. Songyang Wu**, Regional Expert of CCOP Technical Secretariat, **Dr. Eunhee Lee**, Senior Research Scientist, Groundwater Department, Korea Institute of Geoscience and Mineral Resources, **Mr. Jinhwi Lim**, Project Manager, Soda System Inc., Republic of Korea joined this mission. The work in Vietnam was strongly supported by **Dr. Hoang Van Hoan**, Head of the Water resources investigation Department, NAWAPI and **Dr. Pham Van Hung**, Deputy General Director, NAWAPI Southern Division.

On 12 June 2023, SODA technicians arrived at the NAWAPI Southern Division in Ho Chi Minh City to set up the PC (provided by CCOP) as the national data server for their monitoring system. After setting up the server, all the real-time groundwater data acquired from the system will be transferred to the server directly with full access by NAWAPI Southern Division.



Data server setting in the NAWAPI Southern Division, Ho Chi Minh City, Vietnam

Based on the survey in 2022, Q209 at Vinh Long province and Q606 at Dong Thap province have consented as the two best sites to install the monitoring system. From 13-15 June 2023, the team successfully installed the monitoring system in the two sites. At site Q209, two existing well Q209010 and Q209020 were selected to collect to the monitoring system. At site Q606, Q606010 and Q606030 were selected to collect to the monitoring system. The two systems are both equipped the solar panel as the power supply and groundwater water real-time data will be transferred to the system automatically every 1 hour.



Groundwater monitoring system installation at Q209, Vinh Long Province, Vietnam



Groundwater monitoring system installation at Q606, Dong Thap Province, Vietnam

On 16 June 2023, CCOP together with KIGAM and SODA had a meeting in the NAWAPI Southern Division at Ho Chi Minh City, introduced the primary usage of their monitoring platform and discussed any necessary optimizations. The team informed that support and maintenance will be provided until the end of 2025, to ensure that their monitoring solutions are used to their full potential.



Introduction and training of CCOP-KIGAM Groundwater Platform usage

Vietnam is located at the downstream end of the Mekong River, making it a vital area for groundwater monitoring and studying the river's hydrological dynamics. The successful installation of groundwater monitoring equipment in Vietnam is another significant achievement in the CCOP-KIGAM Groundwater Project in this initiative and demonstrates the project's commitment to providing solutions to governments and organizations.

## CCOP-KIGAM Groundwater Project Team Surveyed the Selected Well in Lao PDR

The CCOP-KIGAM Groundwater Project team, in cooperation with Department of Geology and Minerals Lao PDR (DGM) and Department of Water Resources Lao PDR (DWR), conducted the site survey in Lao PDR for groundwater monitoring system installation.

On 19-20 June 2023, CCOP, KIGAM and Soda System Inc conducted the site survey in Lao PDR for groundwater monitoring system installation in Vientiane, Lao PDR. The visit was attended by: CCOP Technical Secretariat, **Dr. Young Joo LEE**, Director, **Dr. Songyang Wu**, Regional Expert, Korea Institute of Geoscience and Mineral Resources, **Dr. Eunhee Lee**, Senior Research Scientist, Groundwater Department, Soda System Inc., Republic of Korea, **Mr. Jinhwi Lim**, Project Manager, Department of Water Resources, Lao PDR, **Mr. Ounakone Xayviliya**, Deputy Director, Groundwater Management Division, Department of Geology and Minerals, Lao PDR, **Mr. Vanpheng Sihavong**, Geologist, **Dr. Khoanta Vorlabood**, Deputy of Survey Geology and Minerals Unit.

During the field assessment on 19 June 2023, which was conducted by the team, the suitability of three underground groundwater monitoring wells established in 2018 was thoroughly examined. Following on-site technical discussions, it was unanimously agreed upon that the monitoring well located within the premises of the Meteorological Office, in close proximity to the Mekong River, is the most suitable for the installation of an automated monitoring system.



On 20 June 2023, the team had a productive discussion on work arrangements at the Department of Water Resources, Lao PDR conference room. The meeting also involved the participation of the Mekong River Commission (MRC) online. **Dr. Songyang Wu**, presided the meeting. **Dr. Eunhee Lee** provided a comprehensive overview of the project's background and highlighted the progress achieved thus far. Attendees also posed questions and offered suggestions, which were answered afterwards.

The primary focus of the meeting centered around the work plan and schedule for the upcoming months. Key topics of discussion included equipment preparation, customs exemptions, and on-site installation timelines. DGM and DWR promised to provide necessary support especially on the custom clearance matter.

The project team also proposed organizing a project workshop in Luang Prabang in the latter half of November, after the completion of work in Laos.



## Groundwater Monitoring System Successful Installation in Lao PDR

The CCOP-KIGAM Groundwater Project successfully installed the groundwater monitoring system in one well in Lao PDR, with the support from the Department of Water Resources, Ministry of Natural Resources and Environment, Lao PDR.

On 2-3 October 2023, CCOP and Soda System Inc visited the Department of Water Resources, Ministry of Natural Resources and Environment, Lao PDR, and together installed the groundwater monitoring system in the well located within the premises of the Meteorological Office near the Mekong River. The mission was supported and attended and by: **Dr. Songyang Wu**, Regional Expert CCOP Technical Secretariat, **Mr. Jinhwi Lim**, Project Manager, Soda System Inc., Republic of Korea and two technicians, **Mr. Ounakone Xayviliya**, Deputy Director, Groundwater Management Division and 3 staffs from Department of Water Resources, MONRE, Lao PDR.

On 2 October 2023, the team arrived at the Department of Water Resources, MONRE in Vientiane and checked the PC and fiber, which are provided by CCOP, and finalized the data server setting for their monitoring devices in the DWR office. Due to the IP address in DWR office cannot be fixed once the PC rebooted, Soda couldn't ensure the server link to the CCOP-KIGAM Groundwater Platform stable for real-time data collecting purposes. Alternatively, after discussing with DWR, the team decided to use the CCOP-KIGAM Groundwater cloud server as Lao PDR's data transfer station and DWR has the full right of accessing to the data from Lao PDR.

On 3 October 2023, the team successfully installed the monitoring equipment in the well located within the premises of the Meteorological Office. The selection of this location is based on the field assessment on 19 June 2023 conducted by CCOP, KIGAM and SODA. The monitoring system in Lao PDR is equipped with solar panel as the electric supply with a battery of 12V/30Ah. The groundwater real-time data will be measured and transferred to the system automatically every 1 hour.



On 3 October 2023, the team introduced and provided a training course on the primary usage of the CCOP-KIGAM Groundwater Monitoring Platform in the Department of Water Resources office and discussed the data accessing and comparison. SODA is committed to continuing to provide maintenance and support for their monitoring equipment and platform, to ensure that the monitoring system is well functioning, until the end of 2025.



As the final country to install the CCOP-KIGAM automatic monitoring system in this project, the successful installation in Lao PDR not only concluded the entire project's work plan but also holds significant importance for Laos as the uppermost contributor to the comprehensive Mekong River groundwater data. CCOP, together with KIGAM and DWR, will organize the final workshop at Luang Prabang in January 2024, to summarize and introduce the achievements of the CCOP-KIGAM Groundwater Project 2020-2023, and discuss the cooperation in the next phase.



## CCOP-GSJ-DGR Groundwater Project Phase IV Meeting

The CCOP-GSJ-DGR Groundwater Project Phase IV Meeting was held on 21-23 March 2023 in Bangkok, Thailand. It was attended by 37 participants (29 onsite and 8 online) from Brunei Darussalam, Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Mongolia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam and the CCOP Technical Secretariat (CCOPTS).



**Dr. Young Joo LEE**, CCOPTS Director and **Dr. Gaurav Shrestha**, the GSJ Groundwater Project Phase IV Leader welcomed all the participants to the meeting.

**Mr. Thanya Netithammakun**, Director-General, Department of Groundwater Resources (DGR), Thailand officially opened the meeting.



**Dr. Gaurav Shrestha**, the GSJ Groundwater Project Phase IV Leader, presented the Past Achievements of CCOP-GSJ Groundwater Project and, Review of Plan and Objectives of Phase IV.

The Phase IV kicked-off in Bali, Indonesia, and its meeting report has been published and its electronic version has been made available at the GSJ website, <https://www.gsj.jp/en/publications/ccop-gsj/index.html> as well as at the CCOP website, <https://ccop.asia/e-library>. During this phase, the project will update, expand and improve the CCOP Groundwater Database made accessible via the GSi System, <https://ccopgsi.org/gsi/groundwater/index.php>. The project's annual meetings will include technical field survey and discussions to solve groundwater pollution problems in DB II countries.

Country reports on "Current monitoring system of groundwater and surface water in one's country, and existing problems" (For Countries with existing monitoring system) and "Future plan and policy for the monitoring system of groundwater and surface water in one's country, and problems to establish the system" (For Countries without existing monitoring system) were presented and discussed among the participants.

**Dr. Joel Bandibas**, the GSi System developer from the Geological Survey of Japan, led the workshop on Groundwater Database Compilation using CCOP GSi System which included training of the usage of the system. Hands-on exercises in uploading groundwater well data to the GSi system were also carried out.

There will be a training session in the next project annual meeting as well. Participants can also contact their respective GSi Project National Coordinator for assistance in using the GSi system. They may also contact the CCOP Technical Secretariat or to **Dr. Joel Bandibas** directly.



On 23 March 2023, the Department of Groundwater Resources (DGR) hosted one day excursion at Ratchaburi Province.



Site visit at the Large-Scale Groundwater Development Project under the Royal Initiatives at Dantabtako Subdistrict, Chom Bueng District, Ratchaburi Province.





Site visit at Groundwater Monitoring Station at Wax Garbage Recycle Center Company, Namphu Subdistrict, Chom Bueng District, Ratchburi Province and followed by Geology and Cultural Excursion at Khao Ngu Stone Park, Ratchaburi Province and Phra Pathom Chedi, Nakhon Pathom Province.

## The 12<sup>th</sup> Liaison Officials' Meeting of CAMCF 2023

On 7 March 2023, the 12<sup>th</sup> Liaison Officials Meeting of the 12<sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition (CAMCF) 2023 was held in person at Sheraton Grand Jakarta Gandaria City Hotel, Jakarta, Indonesia. 40 participants from 10 ASEAN Member States and representatives of China joined the meeting. **Dr. Young Joo LEE**, Director, and **Dr. Songyang Wu**, Regional Expert, represented CCOP at the meeting.

The meeting was facilitated by **Mr. Ye Shaobo**, Director, General Affairs Department, CAMCF Secretariat. **Mr. Zhou Tao**, Secretary-General of CAMCF Secretariat and **Mr. Yose Rizal**, Director of Mineral and Coal Revenue, Directorate General of Mineral and Coal delivered the opening remarks. **Ms. Rabiah Al Adawiyah T. Hussein**, Senior Officer for Minerals, Energy & Minerals Department, ASEAN Secretariat, gave a presentation on ASEC progress in the mining section. **Mr. Ye Shaobo** gave a speech on 'information on the relevant programmes of the 2022 Mining Forum; China-ASEAN Mining Personnel Exchange & Training Center and other projects. **Dr. Young Joo LEE** delivered a speech on behalf of CCOP.



The 12<sup>th</sup> CAMCF is scheduled to be convened in Nanning, Guangxi, China on 17-21 May 2023, co-hosted by the Ministry of Natural Resources of the People's Republic of China and the People's Government of Guangxi Zhuang Autonomous Region. The theme of the 12<sup>th</sup> CAMCF is "jointly integrating into the construction of the Belt and Road, seeking sustainable development of the green mining industry".



## 12<sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition (CAMCF)

On 17-19 May 2023, **Dr. Young Joo LEE**, Director of the CCOPTS and **Dr. Songyang Wu**, Regional Expert of CCOPTS were invited to attend the 12<sup>th</sup> China-ASEAN Mining Cooperation Forum & Exhibition in Nanning, Guangxi Autonomous Region, China.

The China-ASEAN Mining Cooperation Forum is the highest-level and largest-scale international mining event between China and ASEAN countries. Since 2010, it has been successfully held for 11 sessions, with approximately 3,400 participating companies, promoting and discussing over 1,390 projects, and signing more than 160 contracts with a total value of over 66 billion yuan.

The year's forum, themed "Joining Hands for the Construction of the Belt and Road, Seeking Sustainable Development in Green Mining," focused on discussions and exchanges regarding the mechanisms of geoscientific cooperation and information services, mining transformation and green development, national mining promotion and cooperation, cross-border comparative research and mineral exploration, as well as new technology development and application services. Activities such as national mining promotion sessions for Cambodia, Laos, and Malaysia, international mining personnel exchange training courses, mining exhibitions, and more will also be held.

On 18 May 2023, **Dr. Young Joo LEE**, the director of the CCOP Technical Secretariat, was invited to join the Seminar on China-ASEAN Geosciences Cooperation hosted by China Geological Survey, delivered a keynote presentation on "CCOP-China Cooperation Progress and Way Forward", introduced the outcomes that been achieved between China and CCOP in the past year.



## The UNECE Resource Management Week 2023 “Assuring sustainability in resource management”, including the 14<sup>th</sup> session of the Expert Group on Resource Management (EGRM-14)

The UNECE Resource Management Week 2023 “Assuring sustainability in resource management”, including the 14<sup>th</sup> Session of the Expert Group on Resource Management (EGRM-14) was convened at the Palais des Nations in Geneva, Switzerland, 25-28 April 2023.



### The UNECE Resource Management Week 2023 focused on a range of topics:

1. Seminars on deploying the United Nations Framework Classification for Resources in Europe and other regions to assure information for sustainable resource management
2. New model for global collaboration on critical raw materials
3. United Nations Resource Management System (UNRMS): Sustainable Resource Management Transformation Pathway to 2030
4. United Nations Framework Classification for Resources Development and Implementation Roadmap: The next five years
5. International Center of Excellence (ICE) on Sustainable Resource management

**Dr. Young Joo LEE** have participated UNECE management week and EGRM 14 meeting as a capacity of Vice Chairperson of EGRM. **Dr. Young Joo LEE** have joined seminars and all the sessions of EGRM 14 meeting.

During the meeting **Dr. Young Joo LEE** had chance to meet **Mr. Sigurd Heiberg**, Expert of UNFC from Petronavit from Norway and discussed possible opportunity of establishment of ICE in CCOP region. And also **Dr. Young Joo LEE** also had meeting with.

**Mr. Florentino Soares Ferreira**, President of National Petroleum and Mineral Authority of Timor-Leste to ask more close collaboration in the umbrella of CCOP as a member country.

## 79<sup>th</sup> session of the Economic and Social Commission for Asia and the Pacific

The 79<sup>th</sup> session of the Economic and Social Commission for Asia and the Pacific (ESCAP) will be held at the United Nations Conference Centre in Bangkok and online from 15 to 19 May 2023 under the theme, “Accelerating climate action in Asia and the Pacific for sustainable development.” CCOP was invited to join the session and attend the discussion on 18 May 2023 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. Due to the conflict schedule, CCOP was unable to attend the session but instead submitted the report highlighting the achievements of your organization since the previous session of the Commission in May 2022.



### COORDINATING COMMITTEE FOR GEOSCIENCE PROGRAMMES IN EAST AND SOUTHEAST ASIA (CCOP)

#### SUMMARY OF 2022 for UN-ESCAP Seventy-ninth Session of the Economic and Social Commission for Asia and the Pacific (ESCAP): “Accelerating climate action in Asia and the Pacific for sustainable development”

CCOP has been established under the UNESCAP since 1966. In 1991, CCOP has become an independent Intergovernmental Organisation. Starting from January 2021, CCOP has introduced a new strategic plan (2021-2025) with a vision “To be a leading intergovernmental Geoscience Organisation for sustainable development in East and Southeast Asia”, CCOP has worked towards its 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, capability building and outreach”. The organisation also promotes young geoscientists and equal gender issues.

CCOP now has a total of 16 Member Countries including 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. CCOP also has 14 Cooperating Countries (Australia, Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, Poland, Russian Federation, Sweden, United Kingdom and the United States of America); and 17 Cooperating Organizations located around the world. The activities of CCOP cover a wide range of Geoscience with the priority including geohazards, geo-data and information, mineral resources, groundwater resources, urban geology, energy resources, environmental geology and climate change, geoheritage for sustainable geology, geoscience education and geological survey.

### The 3<sup>rd</sup> CCOP-KIGAM Urban Geology Workshop

The CCOP-KIGAM-MGB Urban Geology Workshop 2023 “was held onsite on 6-8 June 2023 in Davao City, Philippines, with the theme: Understanding and Mitigating Subsidence Hazards in Urban Areas. There were 32 participants from 12 Member Countries [China (3), Indonesia (2), Japan (2), Korea (4), Lao PDR (1), Malaysia (1), Myanmar (1), Philippines (9), Thailand (1), Vietnam (1)], 1 Cooperating Country [British Geological Survey (2)], 1 Cooperating Organization [EuroGeoSurveys (1)] and CCOP Technical Secretariat (4). **Dr. Young Joo LEE**, Director of CCOPTS, **Dr. Songyang Wu**, Regional Expert, and **Mrs. Marivic Pulvera Uzarraga**, Manager, Project Operation and Information, CCOP Technical Secretariat hosted the workshop.



During the Opening Ceremony, **Hon. Sebastian Z. Duterte**, City Mayor, Davao City, Philippines represented by **Hon. Marissa S. Abella**, City Councilor and Member, Committee on Environment and Natural Resources, Davao City followed by **Atty. Jasper Alberto H. Lascano**, Regional Director, Mines and Geosciences Bureau (MGB) Regional Office No. XI, Department of Environment and Natural Resources, Philippines delivered the Welcoming Address.





**Dr. Dong Woo Ryu**, Project Manager of KIGAM Urban Geology and **Dr. Young Joo LEE**, Director of CCOP Technical Secretariat delivered the Opening Address.

There are five keynote presentations given by **Ms. Nonita S. Caguioa**, Assistant Secretary for Finance, Information Systems and Mining Concerns, Department of Environment and Natural Resources (DENR), Philippines, **Dr. Dong Woo Ryu**, Project Manager of KIGAM Urban Geology, Korea Institute of Geoscience and Mineral Resources, **Mr. Marcus R. Dobbs**, Head of Engineering Geology from BGS, **Dr. Ma Qingshan**, Associate Research Fellow, Nanjing Center, China Geology Survey and **Dr. Francesco La Vigna**, Chair of Urban Geology Expert Group of EuroGeoSurveys, Geological Survey of Italy.



In the Session of Country Reports, representatives from Member Countries gave presentations sharing the status and updates of urban geology in each country. After the Session of Country Reports, **Mr. Stephen Thorpe**, Geospatial Data Specialist, British Geological Survey gave presentation on title 'Data digitization, management and sharing within BGS. During the last agenda items, group discussions were led by **Mr. Marcus R. Dobbs**, Head of Engineering Geology, BGS, focusing on the following 3 topics and future collaborations: (1) Digital Transformation; (2) Data Sharing; (3) Threats in Urban Areas Related to Climate Change.

On 8 June 2023, the Mines and Geosciences Bureau (MGB) Regional Office No. XI, Department of Environment and Natural Resources, Philippines hosted one-day excursion in Davao City at Central 911, Museum of History and Ethnography, Museo Dabawenyo and Eden Nature Park.



## GEOTHAI 2023

On 5 September 2023, **Dr. Young Joo LEE**, CCOP Technical Secretariat (CCOPTS) Director was invited to be a keynote speaker and gave online presentation on the topic of ‘CCOP’s efforts to reach Net Zero’ at the GEOTHAI 2023, was organized virtually and onsite during 5-7 September 2023. It was organized by the Department of Mineral Resources under the topic “Expanding Thai geological knowledge towards sustainable development”, to provide a platform for experts, academics, and practitioners in the field of geology and mineral resources from government agencies, the private sector, and educational institutions, and related professional associations of more than 400 onsite and online participants.

During the session, an expert exchanged and conveyed experiences together in a combined format including meetings and special lectures, presentation of academic work under subheading ‘Geology for the people, environmental geology for the people and geology for learning for the people and an academic. The discussion focused on the topic of geology to support a low carbon society Geological disaster management in Thailand and geoparks and sustainable management.

**GEOTHAI 2023** ด้วยอุดมศึกษาธรณีวิทยาไทย ไปสู่การพัฒนาที่ยั่งยืน

5-7 Sep. 2023 Geo Thai 2023

**CCOP's efforts to reach Net Zero**

**Dr. Young Joo LEE** Director of CCOP TS

Coordinating Committee for Geoscience Programmes in East and Southeast Asia  
 CCOP Building, 75/10 Rama VI Road, Phayathai, Ratchathewi, Bangkok 10400, THAILAND  
 Tel: +66 (0) 2644 5468, Fax: +66 (0) 2644 5429  
 Email: ccopts@ccop.or.th, Web: <http://www.ccop.asia>

## Energy Forum China 2023 in Shanghai China

Energy Forum China 13<sup>th</sup> Asia-Pacific Shale & Unconventional Resources Conference was held on 18-20 October 2023 in Shanghai China. CCOP as one of the co-organizers joined the conference.



On 18-20 October 2023, the Energy Forum China 13<sup>th</sup> Asia-Pacific Shale & Unconventional Resources Conference was held at Shanghai Science Hall, Shanghai, China. **Dr. Young Joo LEE**, Director and **Dr. Songyang Wu**, Regional Expert of CCOP Technical Secretariat attended the conference on site.

The ECF primarily focuses on research, technological advancements, and industry trends in the shale oil and gas as well as unconventional energy fields. Since its inception, the forum has been dedicated to facilitating communication and collaboration between industry experts, scholars, technical professionals, and industry stakeholders, providing strong support and guidance for the development of the global unconventional energy sector. The theme of Energy Forum China 2023 is "Innovation, sustainable development, and benefit creation". Over 200 participants from China, Papua New Guinea, Russia joined the conference and shared their experience and up-to-date research in oil and gas.

On 18 October 2023, **Dr. Young Joo LEE** delivered a special message during the opening ceremony on behalf of the co-organizers. **Dr. Young Joo LEE** also gave a presentation titled "CCOP's Achievements of Promoting Energy Sector Development in E & SE Asia", highlighted the projects CCOP implemented and outcomes achieved in the past 15 years, including EPPM (2008-2012), CCS-M (2013-2016) and UnCon (2015-2020).



The Eight ECF Innovation Award and the ECF 2023 Outstanding Paper Award recognize individuals and teams who have made outstanding contributions to the field of energy. On behalf of the co-organizer, **Dr. Young Joo LEE** presented the award to all awardees.





During the afternoon session on 18 October, **Dr. Young Joo LEE** facilitated the panel discussion as the moderator, themed “Under the New Energy Landscape, Deepen Multi-party Cooperation” with **Mr. Zhang Hongtao**, Counselor of The State Council, Former Chief Engineer of the Ministry of Land and Resources, China, discussed the opportunities in the background of energy transition in East and Southeast Asia.



## The 2023 International Symposium on Resilient Cities & The 23<sup>rd</sup> Annual General Meeting of UK-CARE

On 9 December 2023, **Dr. Young Joo LEE**, the Director of CCOP Technical Secretariat, and **Dr. Songyang Wu**, Regional Expert of CCOPTS attended the 2023 International Symposium on Resilient Cities & The 23<sup>rd</sup> Annual General Meeting of UK-CARE, in Cangnan, Wenzhou, China

**Dr. Young Joo LEE** underscored the importance of creating resilient communities to face the challenges from climate change and CCOP's commitment in aligning with the regional community in pushing forward our efforts towards the achievement of UN SDG 11, during his remarks at the Opening Ceremony.



**Dr. Songyang Wu** joined the Dialogue Session on “Financing for Building Resilient and Livable Communities and Cities”, shared the strengths and challenges of regional cooperation in promoting resilient cities and financing in East and Southeast Asia.



## STRATEGIC AIM II: ADAPTING TO DIGITAL TRANSFORMATION IN GEOSCIENCE FOR FUTURE EARTH

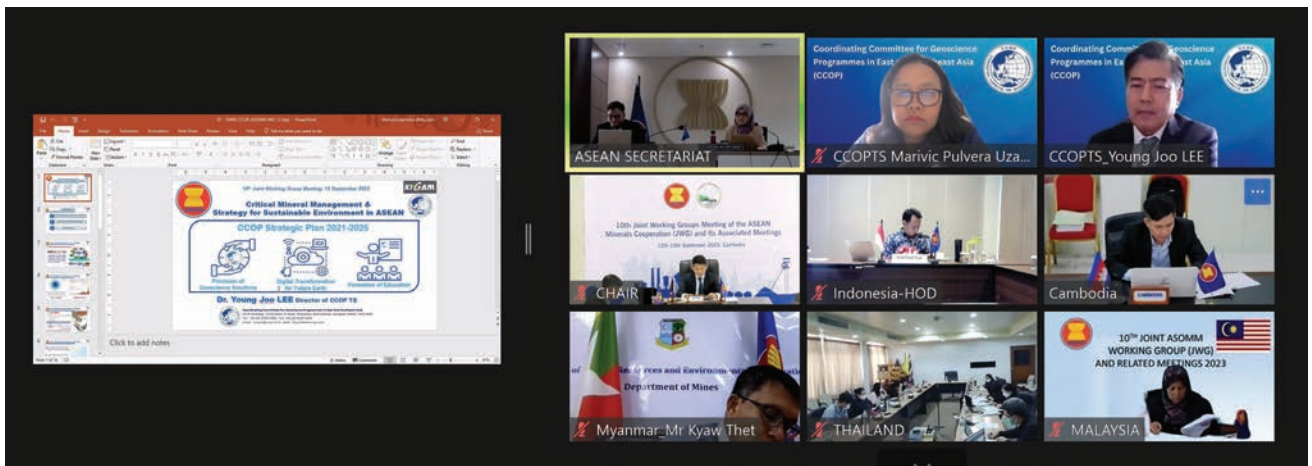
**OBJECTIVE 1:** To utilize the latest technology to develop digital culture and capability.

**OBJECTIVE 2:** To digitally transform geoscience data management.

**OBJECTIVE 3:** To develop cloud technology for interoperable geoscience data consolidation

### 10<sup>th</sup> Joint Working Groups Meeting of the ASEAN Minerals Cooperation (JWG), (Virtual)

The CCOP Technical Secretariat was invited to participate the 10<sup>th</sup> Joint Working Groups Meeting of the ASEAN Minerals Cooperation (JWG) held on 12 September 2023 via Video Conference hosted by Cambodia. CCOPTS Director, **Dr. Young Joo LEE** presented at the meeting updates on the project proposal, "Critical Mineral Management & Strategy for Sustainable Environment in ASEAN". **Dr. Songyang Wu**, CCOPTS Regional Expert, and **Ms. Marivic Pulvera Uzarraga**, CCOPTS Project Information and Operation Manager, also participated this virtual meeting, as well as the project partners from KIGAM.



### 9<sup>th</sup> ASEAN Ministerial Meeting on Minerals and 23<sup>rd</sup> ASEAN Senior Officials Meeting on Minerals

The 9<sup>th</sup> ASEAN Ministerial Meeting on Minerals (AMMin) and its associated meetings and events were held on 21 – 23 November 2023 in Phnom Penh, Cambodia. The meeting was officiated under the theme “Promoting ASEAN as a Sustainable Minerals Investment Destination”. **Dr. Young Joo LEE**, Director of CCOP Technical Secretariat, and **Dr. Songyang Wu**, Regional Expert, attended on behalf of CCOP.



On 22 November 2023, **Dr. Young Joo LEE** introduced recommendations on improving the geoscientific information base in ASEAN and the relevant use of smart exploration technologies, and CCOP's assessment on geological prospectivity of the ASEAN region, with the forthcoming ASEAN-CCOP-KIGAM Multi-Year Project on Critical Mineral Management and Strategy for Sustainable Environment in ASEAN.

The Meeting and participating Member States welcomed the 3-year AKCF Capacity Building Programme on Critical Minerals Management and Strategy for Sustainable Environment in ASEAN in line with the AMIS enhancement. All parties expressed full support and looked forward to the successful implementation of the program.



**Dr. Young Joo LEE** also met with the ASEAN Secretariat (ASEC), Intergovernmental Forum on Mining, Minerals, Metal and Sustainable Development (IGF), at the Meeting and exchanged ideas on cooperation with CCOP, especially within the framework of the upcoming project on critical minerals.



## STRATEGIC AIM II: ADAPTING TO DIGITAL TRANSFORMATION IN GEOSCIENCE FOR FUTURE EARTH

### OBJECTIVE 2: To digitally transform geoscience data management.

#### GeoSample and Analysis Data Repository System (CCOP-GADR) Technology Transfer to Vietnam Geological Department (VGD), 8-17 February 2023

Dr. Saro Lee and Dr. Jonggyu Han, the GDR Project Leaders, together with Ms. Marivic Pulvera Uzarraga from the CCOP Technical Secretariat travelled together to Hanoi Vietnam to install a server with the CCOP-GADR system at the Center for Information, Archives & Museum (CIAM) of Geology of the Vietnam Geological Department (VGD) during 13-16 February 2023.

Dr. Le Quoc Hung, Permanent Representative of Vietnam to CCOP, and Deputy General Director of Vietnam Geological Department, Ministry of Natural Resources and Environment (MONRE), welcomed the GDR Project Leaders and CCOPTS at CIAM on the first day. Together with him are Representative of Leaders of Vietnam Geological Department - Fundamental Geology Office, Applied Geology Office as well as from the Department of Information Technology (DINTE of MONRE), Center for Information and Data of Minerals of the Department of Minerals of Vietnam and Officials of Center for Information, Archives & Museum of Geology.



After the successful configuration of the server at CIAM, CCOP-GADR system and administration training for the designated CIAM personnel was conducted. CIAM will populate data to the system and plans to showcase it at the scheduled CCOP-GDR Project international workshop in September 2023 hosted by VGD in Hanoi.



On the last day, the KIGAM Project Leaders and CCOPTS visited the VGD's office and were welcomed by **Dr. Le Quoc Hung**. They then proceed to tour around Vietnam's geological museum had an overview of the geological samples displayed.



Prior the trip to Hanoi, the KIGAM Project Leaders together with CCOP had several discussions in preparation for the technology transfer to VGD, as well as the planned project activities for year 2023.

### **CCOP-GADR Technology Transfer to the General Department of Petroleum, Ministry of Mines and Energy, Cambodia**

Under the CCOP-GDR Project, technically and financially supported by KIGAM, GeoSample and Analysis Data Repository System (CCOP-GADR) technology transfer activity continues.

During 3-6 July 2023, **Dr. Saro Lee** and **Dr. Jonggyu Han** from KIGAM, together with CCOPTS Manager, Marivic Pulvera Uzarraga, travelled to Cambodia for the technology transfer to the General Department of Petroleum (GDP), Ministry of Mines and Energy (MME) in Phnom Penh. A server was provided to GDP installed with the GADR system. After successful installation of server at GDP's data center, training for the system's administrator and users was conducted. The training was participated by 8 staff from GDP and from the General Department of Mineral Resources, MME.

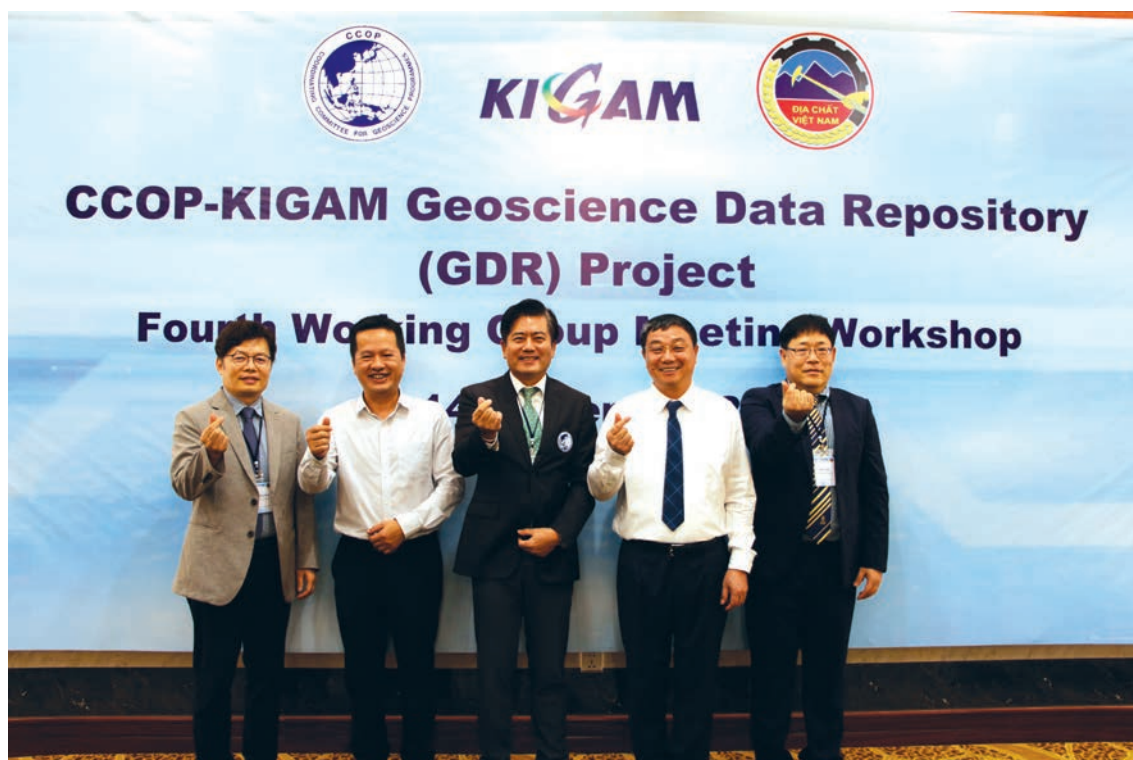




**H.E. Chea Channara**, the new Director-General of the General Department of Petroleum, MME, together with his team, **Director Khoun Sokunthea** of the Department of Petroleum Exploration, and **Director Sreang Samnang** of the Department of International Petroleum Affairs, welcomed KIGAM and CCOPTS to their office. They have also shown the newly renovated GDP's Data Center where the provided CADR server be permanently located.

#### **CCOP-KIGAM Geoscience Data Repository (GDR) Project, Fourth Working Group Meeting/ Workshop**

The Fourth Working Group Meeting and Workshop of the CCOP-KIGAM Geoscience Data Repository (GDR) Project was organized on 13-14 September 2023 in Hanoi Vietnam. It was hosted by Vietnam Geological Department (VGD). The objective of this meeting/ workshop is to update the progress of the GDR Project including the GDR system development and the countries' data population to the GDR Web System, which is accessible from <http://ccop-gdr.org/>. There were 27 participants from the Member Countries – Brunei Darussalam, Cambodia, China, Japan, Republic of Korea, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Thailand, and Vietnam, as well from the CCOP Technical Secretariat.

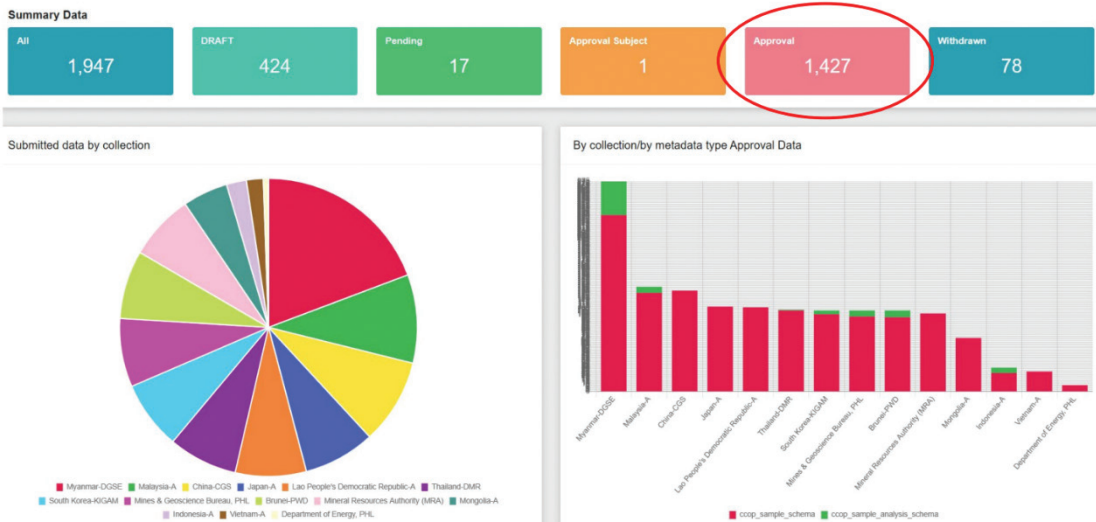




Welcome addresses were delivered by the Director-General of the Vietnam Geological Department (VGD), **Dr. Tran Binh Trong**, and the CCOP-KIGAM GDR Project Leader, **Dr. Saro Lee**. The meeting was officially opened by **Dr. Young Joo LEE**, CCOP Technical Secretariat Director. Also present was **Dr. Le Quoc Hung**, Permanent Representative of Vietnam to CCOP, and VGD Deputy Director-General.

**Dr. JongGyu Han**, one of the CCOP-KIGAM GDR Project Leaders, presented the project progress made. He informed that the project has made three technology transfers from 2022 – a) Mines and Geosciences Bureau (MGB), Philippines; b) Center for Information, Archives & Museum of Geology (CIAMG) of Vietnam Geological Department (VGD); and c) General Department of Petroleum (GDP) of Cambodia. These three organizations received from the project a server with the GDR web system installed for their respective organization’s internal use. He expressed thanks to all the Member Countries for their efforts in populating data to the CCOP-KIGAM GDR Web System. To date, there are 1,427 approved and published to the system, a remarkable increase compared to last year.

## Data registration status



## Data registration status

Country	Geosample	Analysis data	Total	Rank
Myanmar	231	44	275	1
Malaysia	129	8	137	2
China	132	-	132	3
Japan	111	-	111	4
Laos	110	-	110	5
Thailand	106	-	106	6
Korea	102	5	106	7
Philippines	106	8	114	8
Brunei	97	9	106	9
Papua New Guinea	102	-	102	10
Mongolia	70	-	61	11
Indonesia	24	7	31	12
Vietnam	26	-	26	13
Cambodia	-	-	-	14
<b>Total</b>	<b>1,346</b>	<b>81</b>	<b>1,427</b>	

Member Countries presented on their respected progress including list of uploaded data with description, data upload plan for 2023-2024, as well as suggestions and recommendations to the project and the improvement of the GDR web system.

During the hands-on training session, **Dr. JongGyu Han** presented the beta batch upload function, and guided the participants in using this function to upload their data in excel format to the system. As soon as this function is finalized, it will be added to the CCOP-KIGAM GDR web system before the next workshop, as well as to the countries who have been using it internally in their own organization.



During the discussion, there was a request to add a function to the local/internal GDR system that would enable to download the data to excel file and use this excel file to batch upload to the CCOP-KIGAM GDR web system.

The next workshop will be in September 2024. Possible venues are Thailand, Cambodia or Philippines. The CCOP Technical Secretariat will communicate with the respective GDR country coordinator for the final venue. It was also agreed that before the next workshop, countries are expected to upload an additional 200 data.

The following countries/organizations updated on the status of their organization's GDR Web System usage.

- MGB Philippines GDR system is not currently used due to several issues. Possibility of transferring the server to Philippines Department of Energy (DOE) is under consideration.
- GDP Cambodia GDR system is having problem in uploading more data.
- CIAMG VGD Vietnam GDR system – Trying to modify the metadata to suit the needs of VGD. **Dr. JongGyu Han** requested a copy of the modified metadata as soon as done. They also plan to translate to system to Vietnamese language and enhance security of the system. They further request to have batch upload feature.

**Dr. Saro Lee** informed that there are two technology transfers planned for next year. The candidate countries/organizations are Malaysia (JMG), Philippines (DOE), Myanmar (DGSE), Lao PDR (DGM) and Vietnam (DMRV).

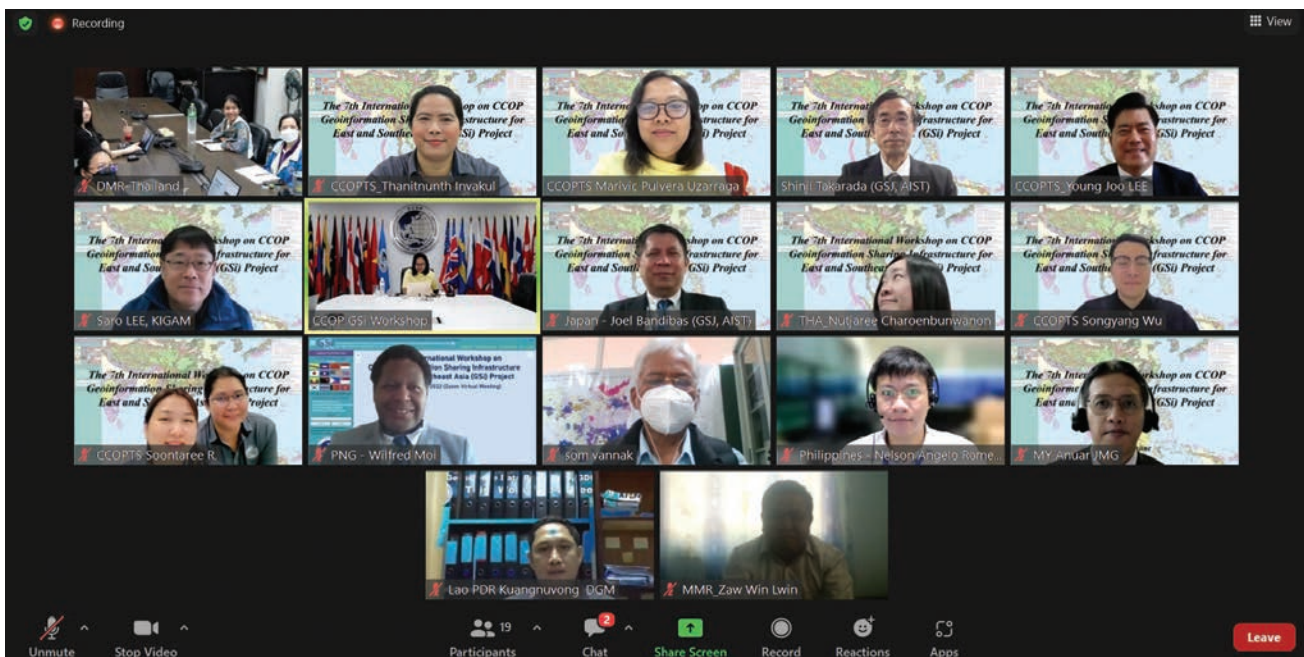
**Dr. Saro Lee** further informed that KIGAM budget may be cut next year. There may be possibility for having online workshop in 2024, if this will be the case.

The meeting was officially closed by **Dr. Young Joo LEE**, CCOP Technical Secretariat, with a note of thanks to KIGAM for their continued support to the project, and to VGD for graciously hosting this meeting.



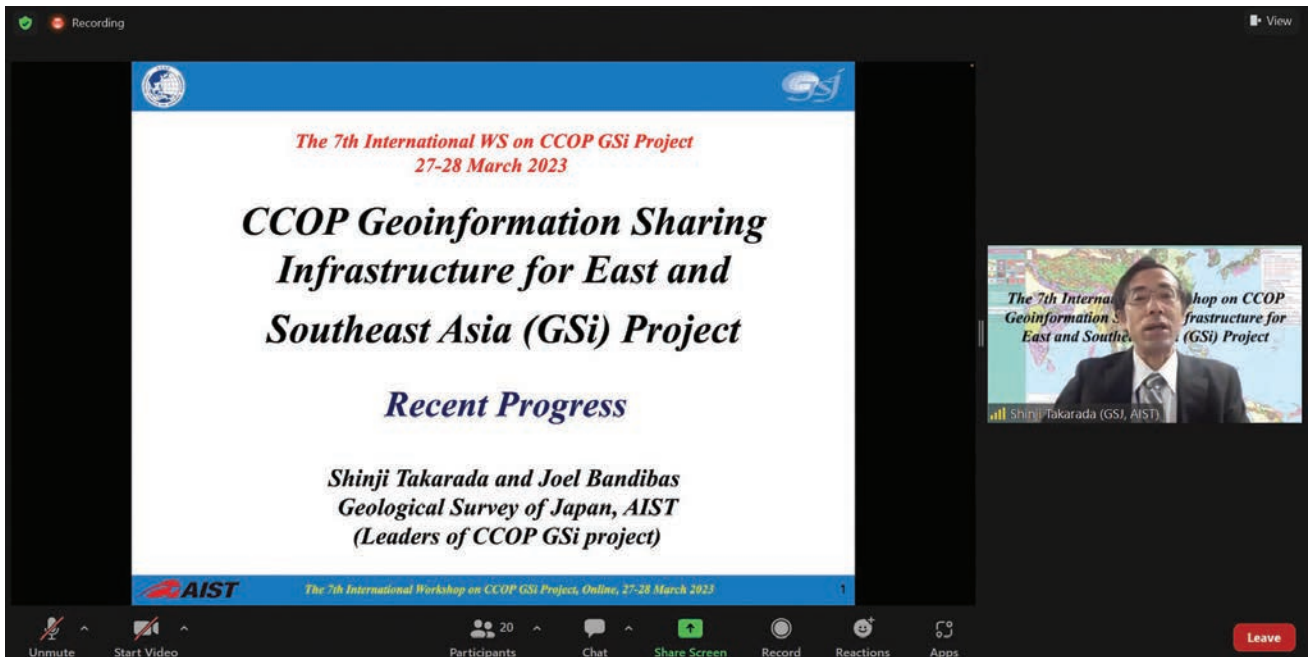
## The Sixth International Workshop on CCOP Geoinformation Sharing Infrastructure for East and Southeast Asia (GSI) Project

The 6<sup>th</sup> International Workshop of the CCOP Geoinformation Sharing Infrastructure for East and Southeast Asia (GSI) Project was held virtually using Zoom Meeting on 24-25 February 2022, hosted by the CCOP Technical Secretariat (CCOP TS). It was attended by 27 participants from the member countries (Brunei Darussalam, Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Myanmar, Papua New Guinea, Philippines, and Thailand) and CCOP TS. The objectives of the workshop are to update the progress of the GSI Project and status of data uploading in each of the CCOP Member Countries, and to discuss suggestions on CCOP GSI System, Hazards Information System, and Natural Resources Information System as well as possible collaborations with KIGAM GDR, IUGS DDE, and other Projects.

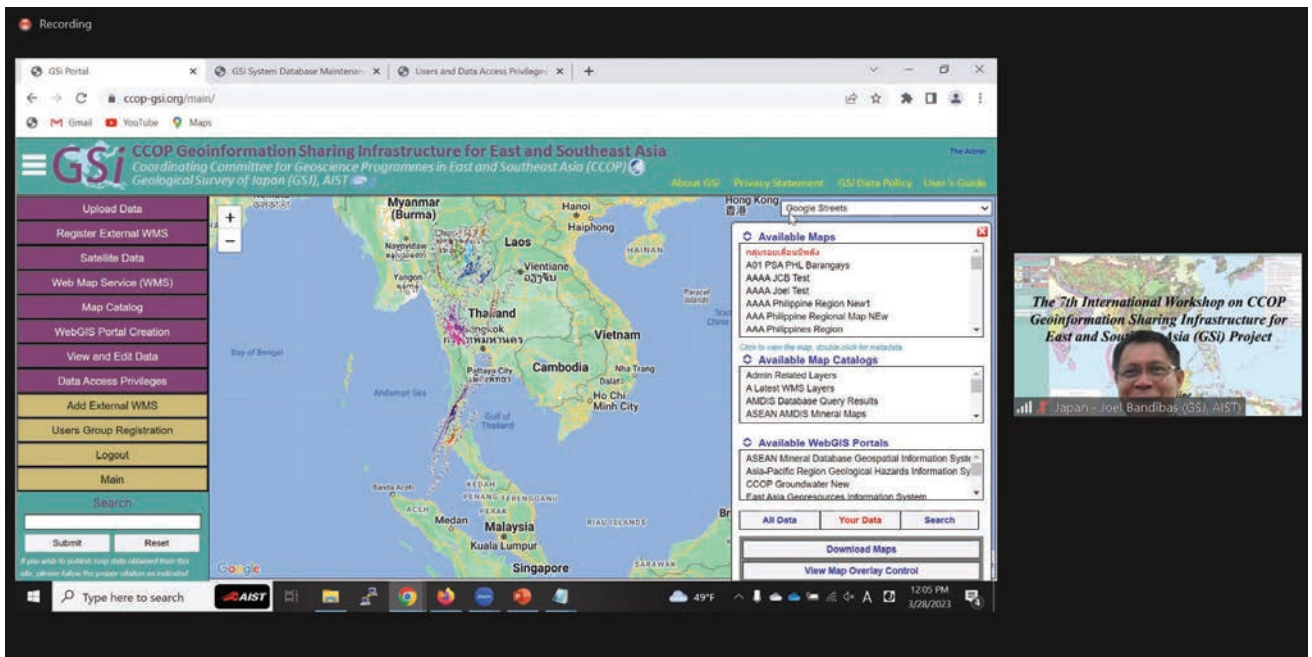


**Dr. Young Joo LEE**, CCOPTS Director welcomed all the participants and officially opened the virtual workshop.

**Dr. Shinji Takarada**, the GSI Project Leader and **Dr. Joel Bandibas**, the GSI system developer, updated the workshop on the progress of the project and the recent developments of the GSI information system. As of February 2022, there are 1,100 map layers accessible in the GSI System, 145 map catalogs, and 23 portal sites.



Dr. Joel Bandibas led the hands-on exercises on the new features of the GSi System, focusing on the uploading of satellite images.



The 7<sup>th</sup> International Workshop of GSi will be held online, within November to December 2022. Dr. Young Joo LEE officially closed the Workshop, congratulating the GSi Project Team under the leadership of Dr. Shinji Takarada and Dr. Joel Bandibas for the accomplishments of the project despite the challenges and limitations faced during this pandemic.

## STRATEGIC AIM III: PROMOTION OF GEOSCIENCE EDUCATION, CAPABILITY BUILDING AND OUTREACH

**OBJECTIVE 1: To provide workshop, seminar, training programmes to MCs, CCs, COs.**

### International Training Course on Sustainable Utilization of Natural Resources in Karst Areas (I): Remote Sensing and Monitoring

Karst area constantly experiences pressure from exploitation and utilization, exacerbating its already fragile and vulnerable ecosystem condition. Limestone mining, agriculture, and over tourism become prominent activities that threaten the integrity and sustainability of the karst area. To address those issues, the International Research Centre of Karst (IRCK) based at the Institute of Karst Geology, Chinese Academy of Geological Sciences under the auspices of UNESCO host the 15<sup>th</sup> International Training Course from 16-29 May 2023. IRCK as the organizer invited participants from across the globe and was attended by trainees and lecturers from Cambodia, Indonesia, Jamaica, Jordan, Libya, Myanmar, Morocco, Pakistan, The Philippines, Romania, Vietnam, the USA, South Korea, and Thailand. On this occasion, the course took place in three locations: Nanning City, Wulong Karst Area, and Guilin, and consisted of several activities including seminars, lectures, field visits, and trainee evaluations.

The participation serves as a continuation of cooperation and joined activities between IRCK and the Karst Research Group and shows the active involvement of the Faculty of Geography in international forums and events. For the future, the cooperation would be followed by joined research and visiting.



## IS-Geo face-to-face regular training course on 'Geoparks 2023: understanding the values of geo-heritages with field excursions

The training course was conducted by IS-Geo of KIGAM in cooperation with CCOPTS in Daejeon, Republic of Korea from June 18 to 24, 2023 at KIGAM, Daejeon (Republic of Korea) with field excursion to Hantangang River UGGP. A total of 35 participants, 26 from local participants, 8 participants have been nominated from CCOP Member Countries (i.e. Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Mongolia, Myanmar, Papua New Guinea, Thailand), and CCOPTS.

This course aims to foster professionals from the Asian countries in the fields of Geoscience and Resources as well as to enhance the capabilities of the cooperating countries/organizations with Korea/KIGAM. Day 1 ~ 2: Lectures on Geology, Application, Recertification and Management of Geoparks. Geologists and geoscientists from Korean National Geoparks and Korean UGGp attended this course. This was a great opportunity to share problems and ideas of Geopark with other Geopark experts. Country presentations on these topics were done on the second day of the course. Day 3 ~ 5: Field excursion to Hantangang River UGGp.



## STRATEGIC AIM III: PROMOTION OF GEOSCIENCE EDUCATION, CAPABILITY BUILDING AND OUTREACH

**OBJECTIVE 2: To strengthen nurturing system for young geoscientists & to promote gender equality**

### EAGER Award 2023

The EAGER Project is a trust fund set up in the Geological Society of America with personal contribution of **Dr. Maurice “Ric” Terman**, CCOP Honorary Advisor, to be used for funding research in geoscience in the region. Under the programme, a grant will be made available for research on Geoscience and Environment in East and Southeast Asia to candidates from the Member Country hosting the CCOP Annual Session since 2003.

For this year, the call for applications for the Ric Terman Award was open to Brunei Darussalam, Cambodia, Indonesia, Korea, Lao PDR, Mongolia, Myanmar, Papua New Guinea, Philippines, Singapore & Timor-Leste, and Vietnam.

The EAGER Grant for 2023 was awarded to **Mr. Hein Min Htet**, PhD student in Department of Geology, University of Yangon, Myanmar at the 59<sup>th</sup> CCOP Annual Session held in Khao Lak, Phang Nga, Thailand. The title of his research proposal is “Integrated Geomorphological and Hydrological Analysis for Flood Hazard Assessment in the Ngawun River Basin, Ayeyarwady Region, Myanmar”.



## 2023 KOREA MOFA Energy International Organization Intern Online Meeting

On 27 November 2023, KOREA MOFA held the 'Energy International Organization Intern Meeting' in a hybrid format. More than 150 young students who have interests in working for international organizations in the energy field were participated in this event.

Experts from international organizations were invited as presenters such as Coordinating Committee for Geoscience Programmes in East and Southeast Asia(CCOP), the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), as well as interns from those international organizations were joined as speakers.

During the meeting, Director **Dr. Young Joo LEE** introduced CCOP and CCOP Internship program. MOFA of Korea announced that they will keep continue the 'Energy International Organization Intern Program' to promote overseas jobs and further nurturing international energy experts for young Korean students.

The screenshot shows a Zoom meeting interface. The main content is a presentation slide titled "CCOP Internship" with the CCOP logo. The slide features three testimonials from former interns:

- Jisoo Kwak / 2019.09 – 2020.03**: Thanks to the warm welcome of Director Dr. Lee and CCOP staff I was able to adapt quickly. As an international studies major, I was able to acquire a variety of knowledge through initial planning of the Annual Session, organizing data within CCOP, and communicating with local staff, even though I had little information on geology. Although it was a short period of time, we were able to grow quickly because we received a lot of help from CCOP's work methods and know-how. Through this experience, I was able to easily prepare for employment upon returning to Korea. We would like to thank the MOFA and CCOP for giving us this great opportunity, and we hope for CCOP's continued development.
- Juhee Seo / 2019.09 – 2020.03**: As an earth and environmental science major, my internship remains an even more valuable experience as it is related to CCOP's goals and activities. Due to the nature of geology, it is difficult to gain job experience without the support of a master's degree or higher, but the MOFA international organization intern project eased the barrier, and CCOP actively opened its doors and supported young people. I was able to gain experience such as supporting the hosting of the CCOP Annual Session, Steering Committee Meeting and had the opportunity to acquire professional knowledge. And I felt personally proud because I was able to contribute the organization through participation in various activities.
- Nakyoung Koo / 2023.08 –**: I am deeply grateful to the MOFA international organization intern project and CCOP for giving me this great opportunity. I majored in environmental engineering and am enrolled in a master's program in A education. I feel that the knowledge I learned is relevant to which CCOP is focusing on, and I would like to learn more in the future. Through the recent organizing CCOP Annual Session and Steering Committee Meeting, I had valuable experience in communicating with geological experts from each country and expanding my horizons. In addition, I was able to experience what kind of projects are being carried out through meetings with geological institutions of each country. I will do my best for the remaining period.

On the right side of the screen, a video feed shows Director Dr. Young Joo Lee speaking. The Zoom interface at the bottom includes a toolbar with options like "Stop Video", "Participants", "Chat", "Share Screen", "Record", "Reactions", "Apps", and "Whiteboards". The system tray shows the time as 2:59 PM on 11/27/2023.

## FINANCIAL HIGHLIGHTS

From 1 January to 31 December 2023, Member Countries' total cash contributions amounted to **USD 508,273.32**, consisting of Brunei Darussalam (USD 10,000), 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), Papua New Guinea (USD 25,000), Philippines (USD 50,000), Thailand (USD 48,273.32), and Vietnam (USD 25,000).

Brunei Darussalam cash contribution year 2022 (USD 10,000) and Vietnam cash contribution year 2022 (USD 25,000) was received in 2023.

The arrears cash contribution expected to receive from Lao PDR year 2022-2023 (in total USD 20,000), Mongolia year 2022 (USD 10,000), Singapore year 2023 (USD 10,000) and Timor-Leste year 2019-2023 (in total USD 50,000) (**Table 1**).

**Table 1: Cash Contributions of Member Countries for 2022-2023  
(Ending 31 December 2023)**

Member Countries	2022 Contribution Received in 2022	2023 Contribution Received in 2023	Arrears Contribution Expected to Receive
Brunei Darussalam	10,000.00	*10,000.00(Y2022) 10,000.00	-
Cambodia	10,000.00	10,000.00	-
China	60,000.00	60,000.00	-
Indonesia	55,000.00	55,000.00	-
Japan	60,000.00	60,000.00	-
Republic of Korea	60,000.00	60,000.00	-
Lao PDR	10,000.00 (Y2020) 10,000.00 (Y2021)	-	10,000.00 (Y2022) 10,000.00
Malaysia	50,000.00	50,000.00	-
Mongolia	-	10,000.00	10,000.00
Myanmar	10,000.00	10,000.00	-
Papua New Guinea	25,000.00	25,000.00	-
Philippines	50,000.00	50,000.00	-
Singapore	10,000.00	-	10,000.00
Thailand	*	48,273.32	-
Timor-Leste	-	-	10,000.00 (Y2019) 10,000.00 (Y2020) 10,000.00 (Y2021) 10,000.00 (Y2022) 10,000.00
Vietnam	-	***25,000.00 (Y2022) 25,000.00	-
<b>Total</b>	<b>420,000.00</b>	<b>508,273.32</b>	<b>90,000.00</b>

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

\*\* Brunei Darussalam cash contribution for 2022 was received in 2023 (USD 10,000)

\*\*\* Vietnam cash contribution for 2022 was received in 2023 (USD 25,000)

In addition to Member Countries' contributions, the amount of **USD 41,790.54** earned from the management of projects during January - December 2023 period which from "Deep-time Digital Earth (DDE) IUGS Big Science Program" (USD 1,500.00), "CCOP-GSJ-DGR Groundwater Project Phase IV Meeting" (USD 3,983.01), "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 2023 (1/2) (USD 5,221.34) and 2<sup>nd</sup> Installment 2023 (2/2) (USD 5,218.98), "CCOP-KIGAM GDR Project: Sharing System Establishment of Digital Geological Sample Data in CCOP Countries", 1<sup>st</sup> Installment 2023 (1/2) (USD 4,638.22) and 2<sup>nd</sup> Installment 2023 (2/2) (USD 4,621.97) and "CCOP-KIGAM Urban Geology Project: Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia", 1<sup>st</sup> Installment 2023 (1/2) (USD 5,212.88) and 2<sup>nd</sup> Installment 2023 (2/2) (USD 5,218.98), CCOP-KIGAM KHAN Project: Feasibility study on potentials of gas power plant for small and medium sized gas field in Southeast Asia", 1<sup>st</sup> Installment 2023 (1/2) (USD 1,738.82) and 2<sup>nd</sup> Installment 2023 (2/2) (USD 1,741.26) and "Contribution Participation Exhibition of the 59<sup>th</sup> CCOP Annual Session, 29 October - 2 November 2023 Avani+ Khao Lak Resort, Phang Nga Thailand" (USD 2,695.08) are shown in **(Table 2)**.

Other incomes during the period amounted to **USD 8,489.44** from interest earned (USD 3,555.90), miscellaneous incomes (USD 674.45), gain on current exchange rate (USD 2.51), and unrealized gain on conversion currencies exchange rate (USD 4,256.58). The total income during the period was **USD 558,553.30**. The expenditure of **USD 509,382.11** was incurred from operation and administrative support and **USD 54,310.63** was incurred from the expenditure of the 59<sup>th</sup> CCOP Annual Session and 81<sup>st</sup> CCOP Steering Committee Meeting Avani+ Khao Lak Resort, Phang Nga, Thailand hosted by CCOP Technical Secretariat. The CCOP Fund Balance as of December 31, 2023 amounted to **USD 1,077,100.40**.

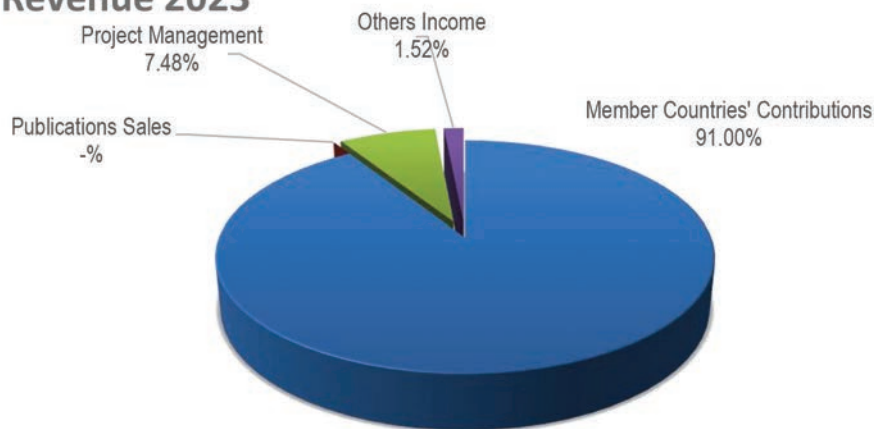
The Technical Secretariat office premise is continuously provided by the Royal Thai Government, through the kind arrangements of the Department of Mineral Resources (DMR), Ministry of Environment and Natural Resources, at the CCOPTS Building, DMR Complex, Rama VI Road, Bangkok, Thailand.

**Table 2: Management Income from Execution of Project and Activity  
(January 1 - December 31, 2023)**

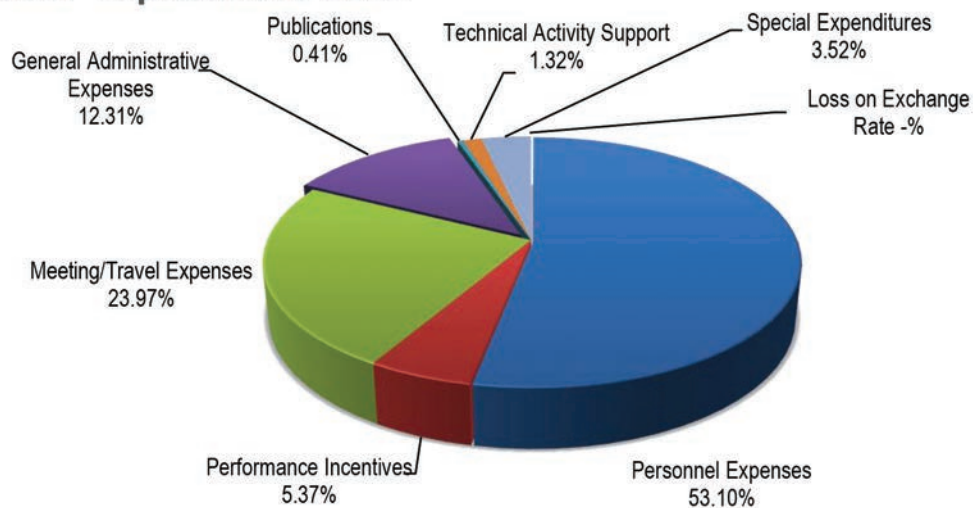
Funding Source	Activities	Country	Contract Period	Amount (USD)
DDE	Deep-time Digital Earth IUGS Big Science Program	Southeast Asia Task Group (SEA-TG)	February 2023	1,500.00
GSJ/AIST	CCOP-GSJ-DGR Groundwater Project Phase IV Meeting	Bangkok, Thailand	March 2023	3,983.01
KIGAM	CCOP-KIGAM Groundwater Project: Vulnerability Assessment to Climate Change of Groundwater System in Greater Mekong Subregion and Comparative Study of Groundwater Dependent Ecosystem		1 <sup>st</sup> Installment 2023 (1/2)	5,221.34
			2 <sup>nd</sup> Installment 2023 (2/2)	5,218.98
KIGAM	CCOP-KIGAM GDR Project: Sharing System Establishment of Digital Geological Sample Data in CCOP Countries		1 <sup>st</sup> Installment 2023 (1/2)	4,638.22
			2 <sup>nd</sup> Installment 2023 (2/2)	4,621.97

Funding Source	Activities	Country	Contract Period	Amount (USD)
KIGAM	CCOP-KIGAM Urban Geology Project: Urban Geology Technology Transfer for Sustainable Cities in East and Southeast Asia	1 <sup>st</sup> Installment 2023 (1/2)	April 1, 2023	5,212.88
		2 <sup>nd</sup> Installment 2023 (2/2)		5,218.98
KIGAM	CCOP-KIGAM KHAN Project: Feasibility study on potentials of gas power plant for small and medium sized gas field in Southeast Asia	1 <sup>st</sup> Installment 2023 (1/2)	June 1, 2023	1,738.82
		2 <sup>nd</sup> Installment 2023 (2/2)		1,741.26
Promotion Booths	Contribution Participation for the Exhibition of the 59 <sup>th</sup> CCOP Annual Session	Phang Nga, Thailand	October 29 - November 2, 2023	2,695.08
<b>Total Project Management Income</b>				<b>41,790.54</b>

### CCOP Revenue 2023



### CCOP Expenditure 2023



## 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, Water Services Public Works Department, Ministry of Development, Brunei Darussalam

#### CAMBODIA:

**H.E. Chea Channara**  
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**  
Permanent Representative of China to CCOP  
Vice Minister for Geological Survey, President, China Geological Survey, Ministry of Natural Resources  
45 Fuwai Street, Xicheng District, Beijing 100037, People's Republic of China

#### INDONESIA:

**Dr. Ir. Muhammad Wafid A.N., M.Sc.**  
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**  
Chairperson, CCOP Steering Committee  
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. Soukansak SISOUK**  
Permanent Representative of Lao PDR to CCOP  
Director-General  
Department of Geology and Minerals Ministry of Energy and Mines  
Khounboulom Road, Vientiane

#### MALAYSIA:

**Datuk Zamri Bin Ramli**  
Vice-Chairperson, CCOP Steering Committee  
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:

**Dr. Uyanga Bold**  
Permanent Representative of Mongolia to CCOP  
Vice Minister, Ministry of Mining and Heavy Industry  
Government building 2, United Nation's Street-5/2, Ulaanbaatar, Mongolia

#### MYANMAR:

**Dr. Thet Tin Nyunt**  
Permanent Representative of Myanmar to CCOP  
Director-General, Geological Survey and Mineral Exploration (DGSE)  
Ministry of Natural Resources and Environmental Conservation  
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. Danilo U. Uykieng**  
Permanent Representative of the Philippines to CCOP  
Officer-in-Charge Director,  
Mines & Geosciences Bureau (MGB)  
North Avenue, Diliman, Quezon City 1600  
Republic of The Philippines

#### SINGAPORE:

**Dr. Adam D. 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. Phichit Sombatmak**  
Permanent Representative of Thailand to CCOP  
Director-General  
Department of Mineral Resources (DMR)  
75/10, Rama VI Road, Ratchathewi 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  
Department of Geology of Vietnam (DGV), Ministry of Natural Resources and Environment (MONRE),  
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  
Interactive Interpretation Section  
Leader, GEUS, Geological Survey  
of Denmark and Greenland,  
Danish Ministry of Climate,  
Energy, and Utilities  
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  
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

### HANYANG UNIVERSITY:

**Dr. Youn Kyoo Kim**  
Director, Hanyang Institute for  
Energy and Environment  
Professor  
Hanyang University  
222, Wangsimni-ro, Seongdong-  
gu, Seoul,  
**Republic of Korea**

### 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.), Baudhdhaloka  
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

### JICA:

**Dr. Yoshitaka Hosoi**  
**Senior Advisor for Natural  
Resources**  
Japan International Cooperation  
Agency (JICA)  
Nibancho Center Building, 5-25  
Niban-cho,  
Chiyoda-ku, Tokyo 102-8012,  
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:

**Dr. Meng WANG**  
President  
Young Earth Scientists (YES)  
Network  
Chinese Academy of Sciences  
Beijing, China

## 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 Xiongliu**

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  
Sarawak Energy Berhad Group of  
Companies (SEB)  
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 Roynenberg, 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, 7784





# **CCOP Annual Report 2023**