



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



# **CCOP ANNUAL REPORT 2014**

*CCOP Technical Secretariat  
Bangkok*

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

Picture on cover page:

*The Beehive Island in Simpson Harbor, East New Britain, Papua New Guinea. Sandwich between the islands are Mt Tavurvur and Mt Turanguna.*

# MESSAGE FROM THE CHAIRMAN



*CCOP has seen another very active and successful year in 2014. I would like to express my sincere gratitude to the CCOP Technical Secretariat for their continuing efforts and excellent performance in various tasks and projects under the leadership of the Director, Dr. Adichat Surinkum. I also thank all the persons in Member Countries, Cooperating Countries and Cooperating Organizations who have enthusiastically supported and participated in the activities of CCOP. Special appreciation goes to Ms. Franca Schwarz, the Chairperson of the CCOP Advisory Group, who continuously encouraged us with thoughtful and insightful observation.*

*As you may recall, activities in CCOP have significantly grown in 2014. Technical supports for the projects from Member Countries in East Asia as well as Cooperating Countries/Organizations have been steady in the few years. I appreciate the large contributions from Norway and Australia through the CCS-M Program. Another notable characteristic this year is that several Member Countries in Southeast Asia have initiated an increasing number of projects and seminars. This is a favorable trend that meets the recommendation by the Advisory Group in 2013, to promote more projects by Member Countries themselves.*

*The 50<sup>th</sup> Annual Session and the 63<sup>rd</sup> Steering Committee Meeting were smoothly and successfully held in Kokopo, Papua New Guinea (PNG) in October 2014 with generous sponsorship and wonderful hospitality of the host country. PNG has also announced that they will increase the cash contribution in 2015. I sincerely appreciate the Government of PNG for their strong support to CCOP.*

*CCOP has made solid and steady growth since its establishment in 1966: however, there still seems to be room for further progress. I think that our technological achievements in geosciences have not yet reached our desired level that can really contribute to the people in East and Southeast Asia. CCOP should be an international data center of geoscience and play the most important role to solve societal issues for geo-resources, geo-environment and geo-hazards for sustainable development of this region and beyond.*

*CCOP will celebrate its 50<sup>th</sup> anniversary in 2016. The Strategic Plan of CCOP will be revised for the term of 2016 – 2020 as well. The 63<sup>rd</sup> SC Meeting in PNG agreed that a working group with responsibility of drafting the new Strategic Plan and giving recommendation for the 50<sup>th</sup> anniversary events will be established in early 2015. These events will indeed be very important milestones for CCOP to achieve sustainable growth in the coming decades in our region.*

*Finally, it is my pleasure that we are going to welcome a new member country, Myanmar, at the next SC meeting in Krabi, Thailand in March 2015. The 51<sup>st</sup> Annual Session in 2015 will be held in China. I sincerely hope that both meetings and other occasions will enhance the discussion and communication among the geoscientists in Member Countries and strengthen our human network toward the future, which I believe is the very advantage of CCOP.*

*I wish all of you a prosperous New Year 2015!*

**Dr. Eikichi Tsukuda**  
Chairman, CCOP Steering Committee

# CCOP: Vision, Mission and Strategy



**Vision:** A premier intergovernmental Earth science organization in East and Southeast Asia.

**Mission:** To contribute significantly to the economic development and sustainable management of the environment and improvement of the quality of life of its Member Countries by the application of Earth science knowledge.

## Strategic Focus:

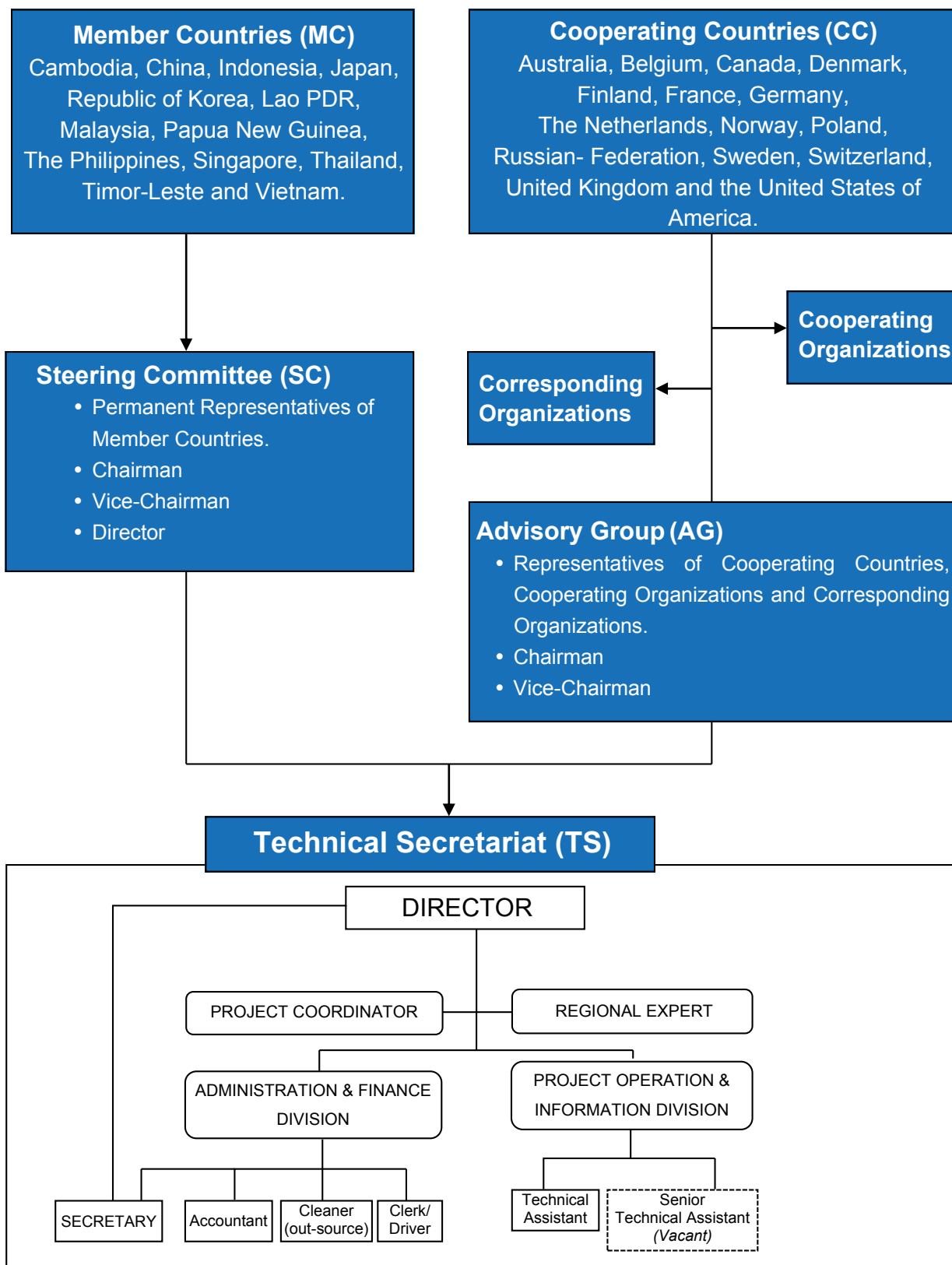
- **Outreach** – to enhance influence with decision makers, investors and the public through the provision of relevant Earth science information and to develop appropriate skills for communicating effectively with CCOP stakeholders.
- **Cooperation and Partnership** – to enhance the internal and external partnerships to improve the quality, reach, application and impact of our Earth science information and knowledge.
- **Knowledge Enhancement and Sharing** – to manage, promote, share and exploit the region's Earth science information and skills.
- **Data and Information** – to advance sharing of data and information and integrate Earth science data across national boundaries.

**Member Countries:** Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste and Vietnam.

**Cooperating Countries:** Australia, Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, Poland, Russian Federation, Sweden, United Kingdom and United States of America.

**Cooperating Organizations:** ASCOPE, CIFEG, CPC, EUROGEOSURVEYS, GETECH, IOC, IOMAC, IUGS, PETRAD, UKM, UN-ESCAP, UNEP, UNESCO, THE WORLD BANK.

# MANAGEMENT AND ORGANIZATION



As of 31 December 2014, the CCOP Technical Secretariat (TS) has 10 personnel, comprising four professionals, five supporting staffs and one outsourced staff.

At the 61<sup>st</sup> CCOP Steering Committee Meeting held on 25 - 26 October 2013 in Sendai, Japan, **Dr. Eikichi Tsukuda**, Permanent Representative of Japan to CCOP has been elected as Chairman of the CCOP Steering Committee succeeding **Dr. R. Sukhyar**, and **Dr. Kyu Han Kim**, Permanent Representative of Republic of Korea to CCOP, as Vice-Chairman of the Steering Committee succeeding **Mr. Leo L. Jasareno**. Their term started in January 2014, and will end on 31 December 2015.

In 2014, **Ms. Franca Schwarz**, Representative of Germany to CCOP and Head of Sub-Department International Cooperation, Federal Institute for Geosciences and Natural Resources (BGR), continued her services as Chairperson of the CCOP Advisory Group, with **Mr. Ioannis Abatzis**, Representative of Denmark to CCOP and Senior Geophysical Adviser, Department of Geophysics, Geological Survey of Denmark and Greenland (GEUS), as Vice-Chairperson.

The 62<sup>nd</sup> CCOP Steering Committee Meeting held on 4 - 6 March 2014 in Chiang Mai, Thailand, approved the nominations of **Prof. Dr. He Qingcheng** (China), **Dr. Hirokazu Kato** (Japan) and **Mr. Somsak Potisat** (Thailand), as Honorary Advisers to CCOP. The 63<sup>rd</sup> CCOP Steering Committee Meeting held on 25 - 26 October 2014 in Kokopo, Papua New Guinea, accepted the nomination of **Dr. Oystein Berg** (Norway) as Honorary Advisor of CCOP.

Regarding the changes of Permanent Representative (PR) of Member Countries to CCOP in the year 2014, **H.E. Mr. Cheap Sour**, Director-General of General Department of Petroleum, Ministry of Mines and Energy succeeded **H.E. Mr. Sok Khavan** as Permanent Representative of Cambodia to CCOP. **Dr. Surono**, Head, Geological Agency of Indonesia, Ministry of Energy and Mineral Resources succeeded **Dr. R. Sukhyar** as Permanent Representative of Indonesia to CCOP. **Mr. Supot Jermsawatdipong**, Director-General, Department of Mineral Resources (DMR) succeeded **Mr. Praneet Roibang** as Permanent Representative of Thailand to CCOP.

As for the Representatives of Cooperating Countries to CCOP, **Dr. Philip R. Hill**, Director, Geological Survey of Canada – Pacific, succeeded **Dr. Carmel Lowe** as Representative of Canada to CCOP. **Mr. Cornelis A. Bons**, Specialist Advisor, Southeast Asia, Deltares, succeeded **Dr. Rien A.C. Dam** as Representative of The Netherlands to CCOP.

## HIGHLIGHTS FOR THE YEAR 2014

### The 62<sup>nd</sup> and 63<sup>rd</sup> CCOP Steering Committee Meetings and the 50<sup>th</sup> CCOP Annual Session

#### The 62<sup>nd</sup> Steering Committee Meeting

The 62<sup>nd</sup> CCOP Steering Committee Meeting was held on 4-6 March 2014 at the Imperial Mae Ping Hotel, Chiang Mai, Thailand. The Meeting was attended by delegates of the following Member Countries (MC): CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALAYSIA, PAPUA NEW GUINEA, PHILIPPINES, THAILAND, TIMOR-LESTE and VIETNAM. Also present were **Ms. Franca Schwarz**, Chairperson of the Advisory Group (AG), **Dr. Yoshihiko Shimazaki**, CCOP Honorary Advisor, and the Director and staff of the CCOP Technical Secretariat (CCOP TS).

At the Opening Ceremony of the meeting, Welcoming remarks were made by the following: (a) **Mr. Chana Pangpiboon**, Vice-Governor of Chiang Mai and (b) **Mr. Praneet Roibang**, Permanent Representative of Thailand to CCOP, Director-General of the Department of Mineral Resources, Thailand. The Chairman of the CCOP Steering Committee Meeting, Permanent Representative of Japan to CCOP and Director-General of the Geological Survey of Japan, AIST, **Dr. Eikichi Tsukuda** opened the 62<sup>nd</sup> CCOP Steering Committee Meeting.

The 60<sup>th</sup> SC Meeting discussed about the administrative and financial status of CCOP, as well as technical projects and activities conducted during the period of 1 January to 31 December 2013. The Revised Budget and Workplan for 2014 were reported, and endorsed by the Meeting. The following new initiatives were proposed at the meeting:

### **Japan**

- A. An idea on a project in the future – Development of Geoinformation Sharing Infrastructure
- B. New CCOP Projects (2014 – 2018):
  - 1) G-EVER GeoHazards, 2) Groundwater Phase III, 3) DeISEA Phase III
- C. Side meeting on geohazards at the 3rd UN World Conference on Disaster Reduction in Japan in March 2015.

### **Others:**

- 4) CCOP-ASEAN Harmonized Geology Project
- 5) CCOP Higher Education Support Network

At the meeting, China, Japan, and Thailand proposed new honorary advisers, which were then approved by the Meeting: **Dr. He Qingcheng** (China), **Dr. Hirokazu Kato** (Japan) and **Mr. Somsak Potisat** (Thailand).

The delegates went for the excursion at The First Royal Factory at “Fang The Museum”, Fang Hot Springs and Fang geothermal power plant, “Museum and Learning Center for Knowledge of Petroleum Defense Energy Department” and “Defense Energy Department Coal Bed Methane Project”, Angkhang Royal Agricultural Station Project, and Fang Widhayakhom School: Rock & Mineral Garden & Seismic Station Network.



*Delegates of the 62<sup>nd</sup> CCOP Steering Committee Meeting, 4-5 March 2014, Chiangmai, Thailand.*

### **The 50<sup>th</sup> CCOP Annual Session:**

The 50<sup>th</sup> CCOP Annual Session was held at Gazelle International Hotel in Kokopo, East New Britain Province, Papua New Guinea (PNG) on 20-24 October 2014. It was organized and supported by PNG's Department of Mineral Policy & Geohazards Management, Mineral Resources Authority, Department of Petroleum & Energy and East New Britain Provincial Government together with the CCOP Technical Secretariat (CCOP TS).

The Session was attended by 146 delegates coming from the Member Countries (Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand and Vietnam), Cooperating Countries (Denmark, Finland, Germany, The Netherlands and Norway), Cooperating Organizations (PETRAD and Universiti Kebangsaan Malaysia), Observers (Myanmar, Mongolia, SOPAC) as well as Honorary Advisers of CCOP and staff of the CCOP Technical Secretariat.

At the Session's Opening Ceremony, welcome addresses were delivered by **Mr. Shadrach Himata**, the Permanent Representative of Papua New Guinea to CCOP, and Secretary, Department of Mineral Policy and Geohazards Management, PNG; and **Hon. Simon Painap**, MPA, Deputy Governor of East New Britain Province, PNG. Special Messages were given by **Ms. Franca Schwarz**, the Chairperson of CCOP Advisory Group, Representative of Germany to CCOP, and the Head of Sub-Department International Cooperation, Federal Institute of Geosciences and Natural Resources (BGR), Germany; and **Dr. Eikichi Tsukuda**, Chairperson of CCOP Steering Committee, Permanent Representative of Japan to CCOP & Director-General of the Geological Survey of Japan, AIST. The opening address was delivered by **Hon. Byron Chan**, MP, the Minister for Mining and Member for Namatanai.



*Dr. Eikichi Tsukuda, Chairperson of the CCOP Steering Committee presenting a token to Hon Byron Chan, MP, the Minister for Mining and Member for Namatanai in Papua New Guinea, at the Opening Ceremony of the 50<sup>th</sup> CCOP Annual Session.*

during the year 2013 with emphasis on the progress during January to June 2014. The Member Countries, Cooperating Countries and Cooperating Organizations represented at the Session made presentations on their country and organization report. The CCOP Workplan for 2015 was presented by the CCOPTS Director for the information and comments of the Session. The Advisory Group met and discussed separately, and presented at the Session their recommendations for CCOP.

The CCOP TS Director reported at the Session, that Cambodia could not host the 2015 CCOP Annual Session as supposed, due to the recent change of its Government and changes of Ministries. Thailand Delegation informed the Session that Thailand will host the 52<sup>nd</sup> CCOP Annual Session in the year 2016, for the 50<sup>th</sup> year anniversary of the founding of CCOP.



*At the thematic session, all delegates were wearing a PNG traditional I shirt, called "Toana", provided by the host.*

A thematic session on the topic “Geo-Resources: Potential, Development and Management” was held with contribution of 38 presentations, including 27 talks and 11 posters.

Geological excursion around Rabaul was organized on the last day. Highlights of the excursion include the boat cruise around Karavia Bay to see Vulcan and Tavurvur Volcanoes, and the Hot Springs at Matupit Bay.

### The 63<sup>rd</sup> Steering Committee Meeting

Following the 50<sup>th</sup> CCOP Annual Session is the 63<sup>rd</sup> CCOP Steering Committee Meeting held on 25-26 October 2014 at the same venue. The Meeting was attended by delegates of the following Member Countries: Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand, and Vietnam. Mongolia and Myanmar attended as observer countries, and SOPAC as observer organization. Also present were **Ms. Franca Schwarz**, Chairperson of the Advisory Group (AG) and the Director and staff of the CCOP Technical Secretariat (CCOP TS).



*Delegates of the 63<sup>rd</sup> CCOP Steering Committee Meeting, 25-26 October 2014, Kokopo, PNG.*

The Director presented the CCOP Progress Report covering the period from 1 January 2014 to 30 June 2014. The report included the administration and personnel, finance, technical cooperation and project support, technical activities, fellowships and grants, publications and documentations. He also presented the actions taken according to the recommendations of all previous CCOP Steering Committee Meetings and proposed workplan, budget for 2015, which were consequently approved by the Meeting with some amendments.

**Mr. Simplicio Caluyong**, CCS-M Program Coordinator presented the report of the CCOP CO<sub>2</sub> Storage Mapping Program (CCS-M).

**Dr. Ye Myint Swe**, Director General, Department of Geological Survey and Mineral Exploration, Ministry of Mines, informed that the Government of Myanmar has approved for Myanmar to become a member country of CCOP. The Meeting accepted Myanmar as a CCOP Member Country, and will have a signing ceremony at the next CCOP Steering Committee Meeting in March 2015, Krabi, Thailand.

The Meeting accepted Thailand's nomination of **Dr. Oystein Berg** as Honorary Advisor of CCOP. **Dr Oystein Berg's** expertise and wide experience is beneficial and valuable to CCOP and the Advisory Group, and he has greatly contributed through the capacity building activities to all CCOP MCs.

The Thailand Delegation informed the Meeting that the 64<sup>th</sup> CCOP Steering Committee Meeting is planned to be held on 23-26 March 2015 in Krabi, Thailand.



*Mr. Shadrach Himata, Permanent Representative of PNG to CCOP, turning over the hosting of the CCOP Annual Session the PNG way, to China, represented by Mr. Ma Yongzheng, Deputy Permanent Representative of CCOP to China.*

China volunteered to host the 51<sup>st</sup> CCOP AS and 65<sup>th</sup> SC Meeting. Venue and time will be informed later after consultations with MCs, CCs and COs as well as CCOP TS. The Philippines informed the Meeting that they will inform and seek the early approval from her government to host the 2017 AS and 69<sup>th</sup> Steering Committee Meeting. Thailand confirmed hosting the 52<sup>nd</sup> CCOP Annual Session and 67<sup>th</sup> Steering Committee meeting to coincide with the 50<sup>th</sup> Anniversary of CCOP. The Royal Thai Government, through the Ministry of Natural Resources and Environment has been informed and agreed on the proposed activity. Thailand will further inform the CCOP Member Countries at the 64<sup>th</sup> CCOP Steering Committee that will be held in Krabi, Thailand on March 2015. Republic of Korea reiterated their offer to host the 2018 CCOP Annual Session and Steering Committee Meeting to coincide with KIGAM's centennial anniversary celebration.

### **CCOP New Membership**

The CCOP TS continued its efforts in pursuing new memberships in particular, Myanmar, Brunei and Mongolia as new Member Countries. At the 63<sup>rd</sup> CCOP Steering Committee Meeting held in Kokopo, Papua New Guinea, **Dr. Ye Myint Swe**, Director General, Department of Geological Survey and Mineral Exploration, Ministry of Mines, informed that the Government of Myanmar has approved Myanmar becoming a Member Country of CCOP. The Meeting accepted Myanmar as a CCOP Member Country and a signing ceremony will be held at the 64<sup>th</sup> CCOP Steering Committee Meeting in March 2015, Krabi, Thailand.

# TECHNICAL COOPERATION

With a vision of “Geoscience for a sustainable future” for East and Southeast Asia region, CCOP continued to adopt an evolving programme of activities that addressed the new areas of concern in response to the needs of the CCOP Member Countries. Capacity building and cooperation workshops, training courses and case studies have been coordinated through the functions of three technical sectors: Geo-Resources Sector; Geo-Environment Sector; and Geo-Information Sector, according to the approved CCOP Workplan 2014.

On-going programmes in this year included not only technical forums such as carbon capture and storage into geological reservoir, application of UNFC 2009 for oil/gas resources, unconventional oil/gas resources, mineral exploitation but also outreach activities such as mining inspection, sustainable use of ground water, development of geopark, geohazard mitigation and trans-boundary issues such as trans-boundary aquifers, geochemical mapping and geological harmonization. Table 3 below summarizes the ongoing activities in cooperation among Member Countries, Cooperating Countries and Cooperating Organizations.

Other Cooperating Countries generally continued their technical support to a number of multilateral and bilateral technical cooperation (TC) activities in CCOP Member Countries by providing valuable advice and guidance as well as resource persons and technical assistance. Thanks are due to all the Cooperating Countries and Organizations for their provision of representatives to CCOP who have contributed in large measure to the review, assessment and formulation of CCOP work programmes and for the contribution of technical information.

## Summary of CCOP Technical Activities with Member Countries, and Cooperating Countries & Organizations in 2014

Country/ Organization	CCOP Technical Activities
Cambodia	Cambodia continues to provide resource persons to participate in CCOP technical activities.
China	<p>SINOPEC co-organized with CCOP and PETRAD the seminar on “LNG Strategy, Policy, Technology and Systems with particular emphasis on the role of LNG for a reduced carbon footprint” on June 11 – 13, 2014 in Beijing, China.</p> <p>Energy China Forum co-organized with CCOP the 4<sup>th</sup> ECF Asia Shale Gas Summit (Shanghai) 2014 &amp; Asia Pacific Unconventional Resources Technology &amp; Equipment Exhibition on Oct 14-16, 2014 in Shanghai, China.</p> <p>CGS continues to support for the CCOP/ ASEAN Geochemical Mapping Project 2011-2015. Activity in 2014 includes field trips for sampling and analysis in Lao PDR and Papua New Guinea.</p> <p>China Geological Survey (CGS) co-organized with CCOP the Training Course for the CCOP-CGS Integrated Geophysical and Geochemical Data Processing (IGDP) on August 22-24, 2014 in Kunming, China. The IGDP Project is financially and technically supported by CGS since 2011.</p>
Indonesia	<p>Geological Agency of Indonesia (GAI) co-organized with CCOP the CCS-M Training Course 3 (T3): Communicating CCS to the Public on February 18-21, 2014 in Bandung, Indonesia. The training course is in the framework of the CCS-M Program.</p> <p>GAI and LEMIGAS continued to cooperate with CCOP to facilitate the Indonesia Case Study in 2014.</p> <p>GAI co-organized with CCOP and DMR, DMF and DED (Thailand) the Workshop on Coal Bed Methane 4-6 March 2014 in Chiang Mai, Thailand.</p> <p>GAI co-organized with CCOP and GSJ/AIST (Japan) the Groundwater Phase II Final Meeting on March 18-20, 2014 in Bandung, Indonesia.</p> <p>Marine Geological Institute (MGI) co-organized with CCOP and GSJ/AIST (Japan) the DELSEA-II Workshop on coastal geology and hazards on March 16 – 22, 2014 in Bandung, Indonesia.</p>

Country/ Organization	CCOP Technical Activities
Japan	<p>GSJ/AIST provided resource persons to the CCS-M Training Course 5 (T5): GIS Applications in Geological Storage Mapping on August 5-8, 2014 in Daejeon, Republic of Korea. GSJ/AIST continues support for the CCOP-AIST Groundwater Project Phase II with Final Meeting on March 18-20, 2014 in Bandung, Indonesia. Phase III of this project for the period of 2014 – 2018 was proposed by Japan and then endorsed by the 62<sup>nd</sup> CCOP Steering Committee in March 2014.</p> <p>GSJ/AIST continues support for the DeISEA project with the DELSEA-II Workshop on March 16 – 22, 2014 in Bandung, Indonesia and the CCOP-GSJ/AIST– DMR–DMCR Workshop on Coastal – Marine Geology on February 11-13, 2014 in Rayong, Thailand. Phase III of this project for the period of 2014 – 2018 was endorsed by the 62<sup>nd</sup> CCOP Steering Committee in March 2014.</p> <p>GSJ/AIST continues support for the G-EVER Geohazards Project with a plan for the period of 2014 – 2018 proposed by Japan and then endorsed by the 62<sup>nd</sup> CCOP Steering Committee.</p> <p>GSJ/AIST co-organized with CCOP the UNEP-CCOP-GSJ/AIST Workshop on the “Risk Management of Mercury in and around the Artisanal/Small-Scale Gold Mining Sites” on November 21, 2014 in Bangkok, Thailand.</p> <p>University of Tokyo (UOT) co-organized with CCOP and DMR (Thailand) the Workshop on INSAR Application for Geohazards on August 19-20, 2014 in Bangkok, Thailand.</p> <p>GSJ/AIST continues support for the CCOP Book Project on “Stone Heritages in East and South East Asia”.</p> <p>GSJ/AIST continues support for the ASEAN Harmonized Geology Project and co-organized with CCOP the second facilitation meeting on March 3, 2014 in Chiangmai, Thailand and the Kick-off meeting on July 16-17, 2014 in Bangkok, Thailand.</p> <p>GSJ/AIST proposed the CCOP High Education Support Network Program and co-organized with CCOP the second facilitation meeting on March 3, 2014 in Chiangmai, Thailand.</p>
Republic of Korea	<p>Korean Institute of Geoscience and Mineral Resources (KIGAM) co-organized with CCOP and provided resource person for the CCS-M Training Course 5 (T5): Introduction to Geographic Information System (GIS) – Applications in mapping for geological storage of CO<sub>2</sub> on August 5-8, 2014 in Daejeon, Republic of Korea.</p> <p>KIGAM sponsored a 5-year CCOP-KIGAM Project (2013-2017) “Solution for Groundwater problems in CCOP region”.</p> <p>KIGAM and IS-Geo continued to offer CCOP Member Countries and CCOPTS 3 Regular Training Courses in Daejeon, Republic of Korea on: 1) “Fundamentals on Geological Survey” on June 2-27, 2014; 2) “Groundwater Theory and Application” from June 30 through July 15, 2014; 3) Coastal Geology and Geohazards on September 1-15, 2014.</p> <p>KIGAM and Jeju Province Development Corporation (JDPC) sponsored and cooperated with CCOP to organize the CCOP-KIGAM-JDPC World Water Forum on October 6-8, 2014 in Jeju, Republic of Korea.</p>
Lao PDR	<p>Department of Mines (DOM) co-organized with CCOP and BGR (Germany) the CCOP Workshop “State Management of Mining Activities in ASEAN Countries” on November 25-27, 2014 in Vientiane, Laos.</p>
Malaysia	<p>PETRONAS and Minerals and Geoscience Department (JMG), in cooperation with CCOP and the Global CCS Institute, Norwegian Ministry of Foreign Affairs, and PETRAD, conducted the subject CCS-M T4 on May 27-30, 2014 in Penang, Malaysia.</p> <p>Malaysia continued to providing resource persons to attend CCOP activities.</p>
Papua New Guinea	<p>PNG hosted and sponsored for the 50<sup>th</sup> CCOP Annual Session, 63<sup>rd</sup> Steering Committee and side meetings during October 20-26, 2014 in Kokopo, Papua New Guinea.</p>
Philippines	<p>The Mines and Geosciences Bureau (MGB) supports the CCOP Book Project: “Best practices on Mine Decommissioning &amp; Rehabilitation Plan in CCOP region”.</p>
Singapore	<p>Singapore continues to be updated with CCOP activities from CCOP TS.</p>

Country/ Organization	CCOP Technical Activities
Thailand	<p>Department of Mineral Fuels (DMF) co-organized with CCOP, PETRAD and the Royal Norwegian Embassy – Bangkok the seminar “Pipeline and Production Facilities Integrity Inspection and Management” on January 28-29, 2014 in Bangkok, Thailand.</p> <p>Department of Mineral Resources (DMR), DMF and Defense Energy Department (DED) co-organized with CCOP and GAI (Indonesia) the Workshop on Coal Bed Methane on March 4-6, 2014 in Chiang Mai, Thailand.</p> <p>DMR co-organized with CCOP and Metal Bulletin Events the 4<sup>th</sup> South East Asian Industrial Minerals Conference on November 11 – 14, 2014 in Bangkok, Thailand.</p> <p>DMR and Department of Marine and Coastal resources (DMCR) organized in cooperation with CCOP and GSJ/AIST the Workshop on Coastal Marine Geology on February 11-13, 2014 in Rayong, Thailand.</p> <p>DMR co-organized with CCOP and University of Tokyo (Japan) the Workshop on INSAR Application for Geohazards on August 19-20, 2014 in Bangkok, Thailand.</p> <p>DMR co-organized with CCOP and GSJ/AIST (Japan) the Kick-off meeting of the CCOP-ASEAN Harmonized Geology Project on July 16-17, 2014 at CCOP building.</p> <p>DMF co-organized with CCOP the Seminar/workshop on the Application of UNFC 2009: Classification and Reporting of Petroleum Resources/Reserves and CO2 Injection Projects on December 8-11, 2014 in Bangkok, Thailand.</p> <p>DMR continues to support for the Permanent Office Building for CCOP T/S in DMR Complex, Bangkok, Thailand.</p>

Vietnam	<p>PetroVietnam, Vietnam Petroleum Institute (VPI) and Vietnam Institute of Geosciences and Mineral Resources (VIGMR) sponsored and co-organized with CCOP the CCS-M Seminar 2 (S2): Seminar on Carbon Capture Storage and EOR on March 18-19, 2014 in Hanoi, Vietnam.</p> <p>VIGMR and VPI, in cooperation with CCOP, UNESCO and Dong Van Karst Plateau (DVKP), organized a symposium on “Developing Geoparks within East &amp; Southeast Asia region - Opportunities and Challenges” on September 9-12, 2014 in Hanoi city and Ha Giang province, Vietnam.</p> <p>VIGMR continued to cooperate with DMR (Thailand) and CCOP Community Based Landslide Mitigation.</p> <p>PetroVietnam, VPI cooperated with DANIDA (Denmark) to organize the Concluding Conference of the Capacity Building Project "Research and Education for Integrated Analysis of Geological Basins in Vietnam" on November 21, 2014 in Hanoi, Vietnam, with invitation to CCOP Member Countries and CCOPTS staff.</p>
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### Cooperating Countries

Australia	<p>Australia supported the establishment of Global CCS Institute (GCCSI). GCCSI funded the Facilitation Phase (Year 1) of the CCS-M Program in the amount AUD 0.5 Million.</p> <p>Australia continues to provide resource persons for the CCS-M Program.</p>
Belgium	<p>Belgium continues to support bilateral cooperation projects with countries in CCOP region.</p>
Canada	<p>Canada is now more focused on geohazards during winter, which are the same with China and Japan.</p>
Denmark	<p>Denmark continues to assist CCOP in seeking funding support for CCOP activities.</p> <p>DANIDA (Denmark) cooperated with VPI (Vietnam) to organize the Concluding Conference of the Capacity Building Project "Research and Education for Integrated Analysis of Geological Basins in Vietnam" on November 21, 2014 in Hanoi, Vietnam.</p>
Finland	<p>Finland continues to be updated with CCOP activities from CCOP TS.</p>
France	<p>France continues to be updated with CCOP activities from CCOP TS.</p>
Germany	<p>BGR continues to assist CCOP MCs in Geoscience programs, especially focusing on requests from MCs.</p> <p>BGR sponsored and co-organized with CCOP the Workshop “State Management of Mining Activities in ASEAN Countries” on November 25-27, 2014 in Vientiane, Laos.</p>
Netherlands	<p>Deltares continues to assist CCOP in seeking funding support for CCOP activities.</p>

Country/ Organization	CCOP Technical Activities
<b>Norway</b>	<p>The Norwegian Government through the Royal Norwegian Embassy in Jakarta signed an Agreement on November 28, 2013 with the CCOP TS to support the CCS-M Program with a fund commitment of NOK5.0 Million.</p> <p>The Royal Norwegian Embassy in Bangkok and PETRAD co-organized with CCOP and DMF (Thailand) the seminar “Pipeline and Production Facilities Integrity Inspection and Management” on January 28-29, 2014 in Bangkok, Thailand.</p> <p>Norway also provided resource persons in the CCS-M Program and PETRAD activities.</p>
<b>Poland</b>	Poland continues to be updated with CCOP activities from CCOP TS.
<b>Russian Federation</b>	Russian Federation continues to be updated with CCOP activities from CCOP TS.
<b>Sweden</b>	Sweden continues to be updated with CCOP activities from CCOP TS.
<b>United Kingdom</b>	Cooperated with GETECH in the production and sale of aeromagnetic and gravity maps for CCOP.
<b>United States of America</b>	<p>Annual EAGER Research Grant by the Geological Society of America for CCOP Annual Session host country.</p> <p>USGS provided resource persons to the CCS-M Program in the area of national assessment of geological CO<sub>2</sub> storage sites.</p>
<b>Cooperating Organizations</b>	
<b>ASEAN Council on Petroleum (ASCOPE)</b>	<p>ASCOPE maintained close cooperation with CCOP TS through jointly organized seminars and information exchange for the benefit of the Member Countries.</p> <p>ASCOPE recently published the ADG (ASCOPE Decommissioning Guideline) Book that was developed in cooperation with CCOP TS and PETRAD.</p> <p>CCOP TS participated in ASCOPE Joint Committee meetings to discuss current issues on CCOP and ASCOPE energy program.</p>
<b>Economic &amp; Social Commission for Asia &amp; the Pacific (ESCAP)</b>	<p>Information exchange and discussion, cooperation on technical activities as well as organizing workshops and conferences. CCOP reports to the UN-ESCAP Commission Session and participates in the subcommittee meetings.</p> <p>CCOP participated in the 70<sup>th</sup> UN-ESCAP Session in Bangkok on August 4-8, 2014 in Bangkok, Thailand.</p>
<b>Euro-Geosurveys</b>	<p>EuroGeosurveys and CCOP TS continue to exchange information on Geosciences.</p> <p>EuroGeosurveys invited CCOP TS to join the Annual Session meetings. On 25-27 March 2014, CCOPTS Director attended the EuroGeoSurveys’ 36<sup>th</sup> General Meeting, the Directors Workshop and the EGS-OAGS Workshop in Brussels, Belgium. The CCOPTS Director presented the Role of CCOP toward the 50<sup>th</sup> Anniversary in 2016 and in view of the increasing corporation among the Geological Surveys of Europe and others.</p>
<b>GETECH</b>	Supported in the production and sale of aeromagnetic and gravity maps.
<b>International Union of Geological Sciences (IUGS)</b>	CCOP is an Associate Member of IUGS and annually submits an activity report.
<b>PETRAD</b>	<p>PETRAD and the Royal Norwegian Embassy – Bangkok co-organized with CCOP and DMF (Thailand) the seminar “Pipeline and Production Facilities Integrity Inspection and Management” on January 28-29, 2014 in Bangkok, Thailand.</p> <p>PETRAD cooperated with CCOP and Vietnam to organize the CCS-M Seminar 2 (S2): Carbon Capture Storage and EOR and National Coordinators Meeting (NC1) on 17-20 March 2014 in Hanoi, Vietnam.</p> <p>PETRAD co-organized with CCOP and SINOPEC the seminar on “LNG Strategy, Policy, Technology and Systems with particular emphasis on the role of LNG for a reduced carbon footprint” on June 11 – 13, 2014 in Beijing, China.</p> <p>All reports from previous PETRAD seminars in East and Southeast Asia are available through the CCOP TS in Bangkok.</p>
<b>Universiti Kebangsaan Malaysia (UKM)</b>	UKM and CCOP TS continue to exchange information on Geoscientific networks and meetings.
<b>World Bank</b>	CCOPTS will use the remaining World Bank budget from CASM Workshop for Water Simulation Workshop scheduled in 2015.

# TECHNICAL PROGRAMMES AND ACTIVITIES

During 1 January to 31 December 2014, within framework of 23 on-going programs/projects under 3 sectors, a total of 26 training/workshop activities have been carried out and attended by 890 participants from the Member Countries, as well as from Myanmar and Mongolia. With strategic focus on capacity building, knowledge sharing and technology transfer, workshops, seminars, training courses, working group meetings and expert visits were conducted during the reporting period and were highly appreciated by the Member Countries participation.

**Summary of CCOP Member Countries' Participation in Technical Activities**

Sector	No. of activities	No. of participants
Geo-resources	15	575
Geo-environment	7	214
Geo-information	5	107
TOTAL	26	896

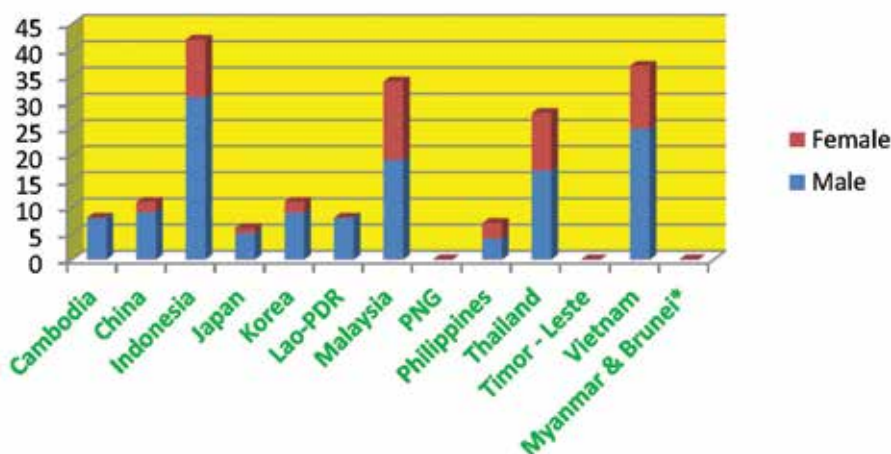
## GEO-RESOURCES SECTOR

### CCS-M PROGRAM

The CCOP CO<sub>2</sub> Storage Mapping Program (CCS-M) is a 4-year program that promotes collaboration among CCOP Member Countries in mapping potential geological storage of CO<sub>2</sub>. The program started in April 2013 with the Signing of the Agreement between CCOP and Global Carbon Capture & Storage Institute (GCCSI) during the 60<sup>th</sup> CCOP Steering Committee Meeting in Ubon Ratchathani, Thailand (March 26, 2013), CCOP and Global CCS Institute signed the Agreement to implement the Facilitation Phase (Year 1). The Agreement includes a fund commitment from GCCSI in the amount AUD0.5 Million to support the capacity building activities of CCS-M. On November 28, 2013, the Norwegian Government through the Royal Norwegian Embassy in Jakarta signed with CCOP an Agreement to support the CCS-M Program with a fund commitment of NOK5.0 Million to cover the activities of CCS-M during the period 1 December 2013 – 31 December 2015. The total budget requirement of CCS-M is USD2.0 Million. The goal of the CCS-M is to enable the government organizations in the CCOP Member Countries to:

1. Provide a high level overview of the potential for large-scale CO<sub>2</sub> storage;
2. Enhance their capacity and capability in the assessment of geological sites for the safe and long-term storage of CO<sub>2</sub>; and
3. Increase their understanding of the potential of CO<sub>2</sub> for enhanced oil/gas recovery.

In 2014, a total of 193 participants from the Member Countries participated in the technical activities of CCS-M bringing to 363, the total number participants since the Program's launching in April 2013. Female participants represented 30% of the total.



During the year 2015, the CCOP TS will continue to promote CCS-M and seek for additional funding to support the technical activities planned for the next three (3) years. For details on the technical activities, please see the CCS-M Webpage, <http://www.ccop.or.th/ccsm>.

### CCS-M T3: Communicating CCS to the Public

The CCOP Technical Secretariat in cooperation with the Global CCS Institute, Royal Norwegian Embassy- Jakarta and Geological Agency Indonesia conducted the CCS-M Training Course 3 (T3) on 18-21 February 2014 in Bandung, Indonesia. Initially the venue of the training course was scheduled in Yogyakarta but later moved to Bandung due to the eruption of Mt Kelud in Java, Indonesia.

T3's agenda included hands-on exercise led by experts from CSIRO (Australia), GCCSI, Bellona (Norway) and from other partner organizations in the CCOP Member Countries and cooperating countries. Participants at the training course are 60 representatives from various Indonesian agencies/organizations and representatives from CCOP Member Countries (Cambodia, China, Indonesia, Republic of Korea, Lao PDR, Japan, Malaysia, Philippines and Vietnam).



*Workshop on strategies in communicating projects, such as CCS, to the public*



*Group photo of T3 participants taken at Horison hotel (venue), Bandung*

### CCS-M Seminar 2 (S2): Carbon Capture Storage and EOR

The CCOP Technical Secretariat in cooperation with the Vietnam Oil and Gas Group (PetroVietnam), Vietnam Petroleum Institute (VPI), Vietnam Institute of Geosciences and Mineral Resources (VIGMR), and International Programme for Petroleum Management and Administration (PETRAD), organized CCS-M S2: Carbon Capture Storage on 17-20 March 2014 in Hanoi, Vietnam.

The seminar was attended by 51 representatives from various Vietnam agencies/organizations, and from CCOP Member Countries (China, Indonesia, Malaysia, Philippines, Thailand and Vietnam). Prior to S2, a 1-day meeting of CCS-M national coordinators was conducted (NC1) at the headquarters of PetroVietnam to discuss future plans of the program, particularly the case study activities.



*Participants of the CCS-M national coordinators' meeting held at PetroVietnam headquarters in Hanoi.*



*Field trip organized by VIGMAR and PetroVietnam to Trang An – Ninh Binh karst which is considered as the "Ha Long" on land in Vietnam*

## CCS-M Training Course 4 (T4): National Assessment of CO<sub>2</sub> Storage Sites and CO<sub>2</sub> for EOR

The CCOP Technical Secretariat, in cooperation with the Global CCS Institute, Norwegian Ministry of Foreign Affairs, PETRAD and Malaysia partners - PETRONAS and Minerals and Geoscience Department, conducted the subject CCS-M T4 on 27-30 May 2014 in Penang, Malaysia. The objectives of T4 were to have a deeper understanding of the methodologies and criteria for the selection of technically accessible storage resources and the use of CO<sub>2</sub> for enhancing oil/gas recovery (EOR). The agenda included hands-on exercises to assess and test the site selection criteria and storage estimation procedures.



*Mr. Fridtjof Riis of the Norwegian Petroleum Directorate, guiding the workshop on CO<sub>2</sub> geological storage site selection.*



*Group photo of T4 participants taken in front of the Bayview Hotel, Georgetown (venue)*

A total of 52 participants including Resource Persons from Australia, Norway, and representatives from CCOP Member Countries (Cambodia, China, Indonesia, Republic of Korea, Lao PDR, Japan, Malaysia, Philippines and Vietnam) and the CCOP Technical Secretariat, attended the training.

## CCS-M Training Course 5 (T5): GIS Applications in Geological Storage Mapping

The training course was held on August 5 - 8, 2014 in Daejeon, Republic of Korea with 32 participants from CCOP Member Countries (Cambodia, China, Indonesia, Republic of Korea, Lao PDR, Japan, Malaysia and Vietnam) and the CCOP Technical Secretariat. CCS-M training course 5 (T5) is a workshop on the application of GIS system as an interactive tool to analyze data and provide information of CO<sub>2</sub> stationary resources, potential geologic CO<sub>2</sub> storage formations, infrastructure, storage estimations, etc. CCS-M is leveraging on the experiences and networks of past and existing GIS and metadata projects of CCOP.

The WebGIS training course demonstrated the GSJ-developed GIS that could be useful for mapping of CO<sub>2</sub> storage sites and a tool to query CO<sub>2</sub> storage capacity estimates. The hands-on exercises proved to be effective and well-appreciated by the participants based on their feedback. Republic of Korea and Japan provided the resource persons for the training.



*Group photo of T5 participants*

### **CCS-M S3: CCOP-DMF Workshop on the application of UNFC 2009: Classification and Reporting of Petroleum Resources/reserves and CO<sub>2</sub> Injection Projects**

Aiming to facilitate the development of the oil and gas reserves reporting guidelines and implementation of reporting standard in the CCOP region, the CCOP-DMF Workshop on the application of UNFC 2009: Classification and Reporting of Petroleum Resources/Reserves and CO<sub>2</sub> Injection Projects was organized in Bangkok on December 8-11, 2014.

A total of 42 participants from CCOP Member Countries – Cambodia, Indonesia, Republic of Korea, Lao-PDR, Malaysia, PNG, Philippines, Vietnam and Thailand (DMF and other Thai agencies) and CCOP TS, attended S3. While Member Countries have varying needs

and procedures in reporting petroleum reserves (& resources), it is common practice to use a standard classification such as the Petroleum Resource Management System (PRMS) that is developed by SPE/WPC/AAPG/SPEE. The PRMS is aligned with UNFC 2009 and is now the bridging document for the petroleum sector providing a tool for all countries to report accurate and consistent estimates, coherent with other scientific and social/economic information.



*Mr. Per Blystad, main resource person of the Workshop explaining the UNFC system to the participants*

## CCOP Norway CCS-M Program Annual Meeting

On September 5, 2014, the CCOP Norway CCS-M Program Annual Meeting was conducted at the CCOP Technical Secretariat under the facilitation by CCS-M Project Coordinator **Mr. Simplicio P. Caluyong**. There were 6 attendants at the meeting. Norway was represented by **Dr. Chatri Moonstan** of the Royal Norwegian Embassy (RNE) – Bangkok and **Ms. Hilde Solbakken** of RNE-Jakarta (who joined the Meeting via Skype). The CCOP Technical Secretariat was represented by CCOPTS Director **Dr. Adichat Surinkum**, Regional Expert **Dr. Nguyen Thi Minh Ngoc**, Finance and Administration Manager **Ms. Sansanee Wudhiwanich**.

## PETRAD SEMINARS

### Seminar on Pipeline and Production Facilities: Integrity Inspection and Management

The Seminar was organized by CCOP TS and PETRAD in cooperation with the Department of Mineral Fuels (DMF), Thailand on January 28-29, 2014 in Bangkok, Thailand. The Norwegian Ministry of Foreign Affairs through the Royal Norwegian Embassy in Bangkok was the main sponsor of the event. It is aimed at enhancing the knowledge of the participants on oil and gas pipelines and production facilities management, hazards, and the common elements of integrity management systems. The Seminar leverages on Norwegian and International experiences and best practices in the oil and gas industry.



*The organizers and resource persons of the Seminar.*

The international resource persons are from the Petroleum Safety Authority, Norway (PSA) and DNV GL (Malaysia and Singapore). A total of 66 participants, from the Department of Mineral Fuels (DMF), Petroleum Authority of Thailand, other government agencies and Oil and Gas companies operating in Thailand have attended.

### PETRAD-SINOPEC-CCOP Seminar on LNG Strategy, Policy, Technology and Systems with particular emphasis on the role of LNG for a reduced carbon footprint

The LNG Seminar was conducted in Beijing, China on June 11-13, 2014. This event was organized by the CCOPTS and PETRAD in cooperation with the Norwegian Ministry of Foreign Affairs thru the Royal Norwegian Embassy (RNE) – Beijing, China's Ministry of Land and Resources (MLR) and SINOPEC PEPRIS.

The objective of the Seminar is to enhance the knowledge of the participants on the various aspects of LNG, including: construction, the latest developments in LNG transportation, design options and trends for floating LNG and terminals, and regasification.

A total of 70 participants attended the Seminar with about ~65 % directly involved in LNG operations.



*The LNG seminar in session.*



*The organizers and resource persons at the Beijing 2008 Olympic site*

## **MEETINGS ON UNCONVENTIONAL OIL AND GAS RESOURCES**

### **CCOP-GA-DMR-DMF-DED Workshop on Coal Bed Methane**

CCOP, in collaboration with the Department of Mineral Resources (DMR), Department of Mineral Fuels (DMF), Defense Energy Department (DED) of Thailand and the Geological Agency of Indonesia (GA), held a Technical Workshop on Coal Bed Methane on March 4-6, 2014 in Chiang Mai, Thailand, in conjunction with the 62<sup>nd</sup> CCOP Steering Committee. The meeting was attended by 25 participants from CCOP Member Countries: Indonesia, Japan, Thailand and Vietnam. A post-meeting 2-day excursion was then arranged for the participants to visit Museum and Learning Center for Knowledge of Petroleum Defense Energy Department” and test site of the “Defense Energy Department Coal Bed Methane Project (DED CBM Project)” in Fang district of Chiang Mai province, Thailand.



*Participants of the Workshop on Coal Bed Methane visited the pumping test site of the “Defense Energy Department Coal Bed Methane Project in Fang district of Chiang Mai province, Thailand.*

### **The 4<sup>th</sup> ECF Asia Shale Gas Summit (Shanghai) 2014 & Asia-Pacific Unconventional Resources Technology & Equipment Exhibition**

The 4<sup>th</sup> ECF Asia Shale Gas Summit (Shanghai) 2014 and Asia-Pacific Unconventional Resources Technology & Equipment Exhibition have been successfully co-organized on 14-16 October 2014 in Shanghai, China by the Energy China Forum (ECF) and CCOP. The ASG 2014 focused on the up-to-date information of Asia-Pacific unconventional resources and E&P technology, and provided the market trend to delegates.

There were attendants from governments and private sectors related to conventional and unconventional oil and gas resources, including 10 resource persons and speakers from CCOP Member Countries (China, Cambodia, Indonesia, Thailand and Vietnam) and Director from CCOP Technical Secretariat.



*Participants of the 4<sup>th</sup> ECF Asia Shale Gas Summit (Shanghai) 2014.*

## **MEETINGS ON MINERAL RESOURCES AND MINING**

### **The 4<sup>th</sup> South East Asian Industrial Minerals Conference**

The 4<sup>th</sup> South East Asian Industrial Minerals Conference has been successfully co-organized on November 11 – 14, 2014 in Bangkok, Thailand by the Metal Bulletin Events and CCOPTS. The aims of this event are to hear about current mineral resources and opportunities in ASEAN countries, to learn about the minerals in the ASEAN region, to understand mining legislation in the region. The workshop was kindly sponsored by EUI TEC Barcelona, organized by Metal Bulletin Events and the field trips were co-hosted by CCOP. There were 100 attendants from governments and private sectors related to industrial minerals, including 55 resource persons and speakers from CCOP member country (Thailand) and CCOP Technical Secretariat.



*Delegation of the 4<sup>th</sup> South East Asian Industrial Minerals Conference visited mine and quartz factory operated by S. Khemarat Company Limited at Wang Dong District in Kanchanaburi Province.*

The event included a 1-day pre-meeting field trip on 11 November 2014 in Uthai Thani and Kanchanaburi provinces, a 2-day seminar on November 12 -13, 2014 in Bangkok and a 1-day post-meeting field trip on November 14, 2014 in Saraburi province, Thailand.

### **BGR - CCOP Workshop “State Management of Mining Activities in ASEAN Countries”**

The CCOP Technical Secretariat in cooperation with the Federal Institute for Geosciences and Natural Resources of Germany (BGR) and Laotian Department of Mines (DOM), has successfully organized the BGR - CCOP Workshop “State Management of Mining Activities in ASEAN Countries” on November 25-27, 2014 in Vientiane, Laos. There were 25 attendants at senior level officials of state mining management organizations from ASEAN/CCOP Member Countries (Cambodia, China, Indonesia, Lao PDR, Malaysia, Philippines, Thailand, Myanmar and Vietnam), resource persons from the BGR mining projects (Vietnam, Mongolia, and Lao PDR), ASEAN Secretariat, BGR and CCOP TS staff. The meeting was also attended by distinguished guests: Vice Minister of Ministry of Energy and Mines (MEM) of Lao PDR, German Ambassador in Lao PDR and BGR representatives.



*Participants of the Workshop “State Management of Mining Activities in ASEAN Countries” visited the Phu Bia Gold/Copper mine in Phu Kham province, Lao PDR*

Held as a technical seminar for two days in Vientiane, Laos and one full-day field trip to Phu Bia gold/copper mine in Phu Kham mountain, this event aimed to disseminate and discuss the results of the Laos – Germany Technical Cooperation Project “Sustainable Development of Mining Sector” with respect to role and exchange of information and experiences of state mining authorities in management of the mining sector.

## **GEOCHEMICAL BASELINE PROJECT**

The 4-year CGS-CCOP-ASEAN Geochemical Mapping Project has been financially supported by China Geological Survey since 2012. The first stage focused on Training and Manual Preparation. Stage 1: Feasibility study of the CCOP-CGS Geochemical Baseline Project started in 2012 with a Kick-off seminar in March 2012 in Nanjing, China and followed by the CGS-CCOP-ASEAN Workshop on Geochemical Mapping on 3-8 September 2013, Nanning, China. Stage 2: Technical manual preparation and Training course is on-going with focus on two activities as follows: 1) Preparation of a Technical manual of sampling, analysis, data management and map production based on the IGCP259/360 final report “the Blue Book”; 2) Revision and finalization of the manual through pilot study in the typical geomorphological landscapes of the CCOP MCs. In 2014, CGS conducted field trips for sampling and analysis in Lao PDR and Papua New Guinea.

## **GEPARK SYMPOSIUMS**

### **CCOP-VIGMR-UNESCO-DVKP Symposium on Developing Geoparks within East & Southeast Asia region - Opportunities and Challenges**

The CCOP Technical Secretariat, together with the Vietnam Institute of Geosciences and Mineral Resources (VIGMR), United Nations Educational, Scientific and Cultural Organization (UNESCO) and Dong Van Karst Plateau Global Geopark (DVKP), has successfully co-organized a symposium on Developing Geoparks within East & Southeast Asia region - Opportunities and Challenges on September 9-12, 2014 in Hanoi city and Ha Giang province in Vietnam. There were **30 participants** from local participants and organizers, 8 CCOP Member Countries and Director of CCOP TS attending the one-day technical seminar and three-day excursion to Dong Van Geopark in Ha Giang province.

Keynote lectures and country report presentations during the meeting covered various aspects of geoparks, displayed different approaches to conserving, protecting and promoting their important geological sites as tangible example of their geoparks. In order to promote cooperation activities on geopark in CCOP region, participants suggested CCOP to develop the CCOP Geopark Network and organize further geopark symposiums in Member Countries.

## CCOP-GSJ/AIST PROJECT ON GROUNDWATER ASSESSMENT AND CONTROL IN THE CCOP REGION

Under the support by GSJ/AIST of Japan, phase I and phase II of the CCOP-GSJ/AIST Groundwater Project had been implemented since 2005 until March 2014. Phase I, focusing on evaluation of groundwater resources and environments through its monitoring, composed of highly structured program towards groundwater related problems challenging all countries. Phase II, starting since 2008, focused more on evaluation of groundwater resources by means of database, in order to facilitate all CCOP Member Countries to share information in the standard format. Phase III of the project, started in March 2014, with the objectives of compiling groundwater information in CCOP countries, and constructing a web based database, using the OGC standard formats. Under this program, each member country will be responsible for maintaining the data quality and updating the database. Final objective is to establish a basic geoinformation infrastructure in Asia and for the world. Kick-off meeting of Phase III is scheduled on February 11-13, 2014 in Bangkok, Thailand.

### The CCOP-GSJ/AIST Groundwater Project Phase II Final Meeting



*Excursion to temperature measurement at observation well for GHPS.*

The meeting was held on March 18-20, 2014 in Bandung, Indonesia, in collaboration with Geological Survey of Japan (GSJ/AIST) and Geological Agency of Indonesia (GA). As a final meeting of the Phase II, this meeting aimed to update and finalize the working group of the progress of the project, as well as share the current developments of groundwater activities in CCOP Member Countries. There were 33 participants at the meeting, including 16 from CCOP Member Countries (Cambodia, China, Indonesia, Republic of Korea, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand, Timor Leste and Vietnam), 1 from Myanmar, 3 from GSJ/AIST, 10 local participants and 2 CCOP TS staff. The meeting was composed of 2-day seminar with country report

presentations, keynote lecture and discussion on plan of Phase III and a full-day excursion to temperature measurement at one observation well at Institute Technology Bandung (ITB) with presentation for Ground Source Heat-Pump System at ITB by Project Leader and a visit to Tangkuban Parahu Volcano and Saung Angklung Udjo. The country's report will be finalized by GSJ and printed out by CCOP TS for distribution to MCs in 2014.

### CCOP-KIGAM-JDPC WORLD WATER FORUM

The CCOP Technical Secretariat, together with the Korean Institute of Geoscience and Mineral Resources (KIGAM) and Jeju Province Development Corporation (JDPC) has successfully organized the CCOP-KIGAM-JDPC World Water Forum on October 6-8, 2014 in Jeju, Republic of Korea. There were 300 attendants from governments and private sectors related to management and utility of groundwater resources, including 18 participants from CCOP Member Countries (China, Cambodia, Indonesia, Japan, Republic of Korea, Malaysia, Lao PDR, Thailand, and Vietnam), KIGAM and CCOP TS staff.



*Excursion to visit the water monitoring drilling site, factory and museum of Samdasoo Mineral water company.*

Held in 2 days in Jeju and one-day field trip around the coast of Jeju-do island, this event aimed to provide participants from CCOP Member Countries an open forum to share information on groundwater resources as well as best practices on groundwater management and the bottled water market in CCOP Member Countries. The meeting agreed that the ways Jeju did for the last 20 years on groundwater management could be a model of the best experiences for MCs to learn and apply in their own countries.

## GEO-ENVIRONMENT SECTOR

### CCOP-KIGAM PROJECT “SOLUTION FOR GROUNDWATER PROBLEMS IN THE CCOP REGION”

The Project was proposed by KIGAM and adopted as new initiative at the 48<sup>th</sup> CCOP Annual Session in November 2012 with updates at the 60<sup>th</sup> CCOP Steering Committee in March 2013. This 5 year (2013-2017) project is sponsored by KIGAM, Republic of Korea and participated in by all CCOP Member Countries. The first phase – Step I, aiming to contribute to the understanding of groundwater problems in the CCOP regions with focus on: 1) Identifying groundwater problems in each country and 2) Building trust and enhancing reliability to cope with groundwater problems in each country, had been completed with 1 training course in Korea and 1 workshop in Thailand. Step II (year 2014) focuses on finding cooperative measures to solve the groundwater problems with two main tasks: 1) Establishment of the international network and 2) Priority decision making for solving the groundwater problems in the CCOP region.

Following the Technical Workshop on Solution for Groundwater Problems in CCOP Region held in 2013 in Pathumthani, Thailand, KIGAM has been gathering feedback from CCOP Member Countries in order to offer tailor-cut solution for solving the groundwater problems in the CCOP region as per request. In addition, International School for Geoscience Resources (IS-Geo) of KIGAM continues to offer and sponsor for the regular training courses on Groundwater Theory and Application for CCOP Member Countries.

### KIGAM-ISGEO-CCOP REGULAR TRAINING COURSES

Aiming to foster professionals from the developing countries as well as to enhance cooperation between MCs and Republic of Korea, KIGAM and International School for Geoscience Resources (ISGeo) continue to support and cooperate with CCOP to organize regular training courses for CCOP Member Countries with sponsorship for two participants per country. For each training course, CCOPTS also sent one staff as a trainee, in order to gain geoscientific knowledge and enhance capacity for better service to Member Countries. In 2014, three training courses have been conducted on different fields of geosciences.



1- “Fundamentals on Geological Survey”



2- “Groundwater Theory and Application”  
KIGAM-CCOP Regular Training courses



3 - “Coastal Geology and Geohazards”

### KIGAM-CCOP Regular Training course on “Fundamentals on Geological Survey”

The training course was conducted by ISGeo of KIGAM in cooperation with CCOPTS in Daejeon, Republic of Korea from June 2 through 27, 2014. The objective of this course is to learn fundamental science: from basics to applications in the field geology. For this purpose, this course consisted of four modules: “Introduction of Petrology & Petrogenesis”, “GIS/RI Theory and Data Processing”, “Structural Geology” and “Quaternary Geology”. A field trip in Republic of Korea for Quaternary Geological mapping was included. There were 13 participants from CCOP Member Countries (i.e. Cambodia, China, Indonesia, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand, Timor-Leste, Vietnam), observer countries (i.e. Myanmar) and CCOPTS.

### KIGAM-CCOP Regular Training course on “Groundwater Theory and Application”

The training course was conducted by ISGeo of KIGAM in cooperation with CCOPTS in Daejeon, Republic of Korea from June 30 through July 15, 2014. The training course was conducted in two modules, wave-dominated coasts and coastal geohazards and tide-dominated coasts and human impacts by classroom lectures as well as on site visits. Country presentations on these topics were done on the last day of the course. A total of 12 participants have been nominated from CCOP Member Countries (i.e. Cambodia, China, Indonesia, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand, Timor-Leste, Vietnam), observer countries (i.e. Myanmar) and CCOPTS.

## KIGAM-CCOP Regular Training course on “Coastal Geology and Geohazards”

International School for Geoscience Resources of KIGAM in cooperation with KIGAM is organizing the training course entitled “Coastal Geology and Geohazards”. The course is being held at KIGAM from September 15 through September 30, 2014. The training course was conducted in two modules, wave-dominated coasts and coastal geohazards and tide-dominated coasts and human impacts by classroom lectures as well as on site visits. Country presentations on these topics were done on the last day of the course. A total of 12 participants have been nominated from CCOP Member Countries (i.e. Cambodia, China, Indonesia, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand, Timor-Leste, Vietnam), observer countries (i.e. Myanmar) and CCOPTS.

## CCOP-UOT-DMR WORKSHOP ON INSAR APPLICATION FOR GEOHAZARDS

The CCOP Technical Secretariat, together with Department of Mineral Resources of Thailand (DMR) and University of Tokyo (Japan) has successfully organized the CCOP-DMR-UOT Workshop on INSAR Application for Geohazards on 19-20 August 2014 in Bangkok and Kanchanaburi, Thailand. There were 34 participants from CCOP Member Countries, University of Tokyo and 3 CCOP TS staff. A cooperation possibility between the Geo-Informatics and Space Technology Development Agency (GISTDA) of Thailand and the neighboring Member Countries was visible with the offer to share



*Workshop on INSAR Application for Geohazards on 19-20 August 2014 in Bangkok*

INSAR data by the Agency. After the meeting, all participants took part in an excursion in Kanchanaburi province to see the seismic monitoring station, triangular facets as evidences for active fault, affected village in the Landslide Watch Network, occurrences of rare earth elements in the weather granitic rock and the metamorphic zone along the boundary between Thailand and Myanmar in the province.

## CCOP-GSJ/AIST PROJECT ON INTEGRATED GEOLOGICAL ASSESSMENT OF DELTAS IN SOUTHEAST ASIA PHASE 2 (DELSEA II PROJECT)

The DeISEA Project has been generously supported by GSJ/AIST, Japan since 2008. DeISEA II project which is one of the Geo-Environment programs has been conducted jointly with IGCP-475 DeltaMAP project for annual meetings and seminars in order to foster exchange of modern knowledge on deltas, Quaternary geology, sequence stratigraphy, and geological coastal management and to enhance joint study for better understanding of deltaic coasts and geological assessment for coastal management.

## CCOP-GSJ/AIST-MGI DeISEA-II Workshop on Coastal Geology and Hazards



*Excursion of the DeISEA delegation to Pamanukan and Cirebon, Indonesia*

CCOP, in collaboration with Geological Survey of Japan (GSJ/AIST), the Marine Geological Institute of Indonesia (MGI), has organized the CCOP-GSJ/AIST-MGI DeISEA-II Workshop on Coastal Geology and Hazards on March 16 – 22, 2014 in Bandung, Indonesia. This workshop was the final meeting of Phase II of the project “Integrated Geological Assessment for Deltas in Southeast and East Asia” (DeISEA project phase II), which is sponsored by Geological Survey of Japan (GSJ/AIST).

The workshop consists of a two-day technical seminar on coastal geology and hazards and followed by a three-day excursion to coastal erosion sites in Pamanukan and Cirebon, with 72 participants from CCOP Member Countries (Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Thailand and Vietnam), various Indonesian agencies/ organizations and CCOPTS.

### **CCOP-GSJ/AIST– DMR–DMCR Workshop on Coastal and Marine Geology**

CCOP, in cooperation with the Geological Survey of Japan (GSJ), AIST, Department of Mineral Resources and Department of Marine and Coastal Resources, Thailand, organized a Technical Workshop on Coastal Marine Geology on February 11-13, 2014 in Rayong, Thailand. The Workshop included 1 1/2 days of seminar and 1 1/2 days on-boat and on-shore field trip in Rayong province, with 38 participants from CCOP Member Countries (Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Singapore, Thailand, and Vietnam). This workshop focused on how we can integrate the data of different types on land via shore line to shallow sea and not-too-deep sea (Hill to Ocean or H2O concept). After the seminar, a half-day on-shore and a full day on-boat excursions were arranged to see coastal land-use in Rayong, Thailand.



*A half-day on-shore and a full day on-boat excursions in Rayong, Thailand*

### **CCOP- VIGMR - DMR PROJECT ON COMMUNITY-BASED LANDSLIDE MITIGATION**

This project was proposed within the cooperation framework between CCOP, Department of Mineral Resources of Thailand (DMR) and Vietnam Institute of Geosciences and Mineral Resources (VIGMR) with attendance of some CCOP Member Countries with serious problems of landslide geohazards (Thailand, Vietnam, Philippines, Indonesia, and Malaysia). The project aims to establish the Landslide Watch Network in a project area (Vietnam as a case study during 2013-2014) and enhance the skills of counterparts in landslide hazard analysis, landslide risk mapping and Landslide Watch Network establishment. After the joint field trip and two workshops held in 2013, during 2014 Thailand and Vietnam continued to discuss and exchange information. Dissemination workshops are planned for 2015 to promote transfer of know-how and possibility of expansion projects in other CCOP Member Countries.

### **PROJECT “RISK MANAGEMENT OF MERCURY CONTAMINATION IN ASIA & THE PACIFIC”**

The UNEP Project entitled “Risk management of mercury contamination in Asia and the Pacific” is funded by the United Nations Environment Programme (UNEP) and led by Dr. Satoshi Muraio from the Institute for Geo-Resources and Environment, GSJ/AIST.

### **UNEP-CCOP-GSJ/AIST Workshop on the Risk Management of Mercury in and around the Artisanal/Small-Scale Gold Mining Sites**

CCOP in cooperation with Geological Survey of Japan (GSJ), AIST, organized the Technical Workshop on the Risk Management of Mercury in and around the Artisanal/Small-Scale Gold Mining Sites (ASGM) on November 21, 2014 in Bangkok, Thailand. The meeting is within the framework of this UNEP project. Aim of this workshop is to share the information on environmental preservation and risk management in mineral mining activities with Asian and Pacific countries, with focus on mercury issues arising from artisanal/small-scale mining (ASGM) and establishing strategies to mitigate the impact of mercury. There were 20 participants at the meeting, coming from Member Countries (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand and Vietnam), Mongolia, Japan and CASM Pakistan, UNEP as well as the CCOP TS.



*Workshop on the risk management of mercury in and around the artisanal/small-scale gold mining sites*

## **ENVIRONMENTAL ANALYSIS SUPPORT PROGRAMME IN THE CCOP AND OTHER REGIONS**

The 48<sup>th</sup> CCOP Steering Committees Meeting in Daejeon, Republic of Korea endorsed the Environmental Analysis Support Programme in the CCOP and Other Regions proposed by AIST/GSJ under the auspices of Japan Radioisotope Association and Iwate Medical University. This programme has continued supporting in-kind services on environmental specimens, which are analyzed by PIXE method. The service is still open up to the maximum number of 500 samples per year and it will be continued annually.

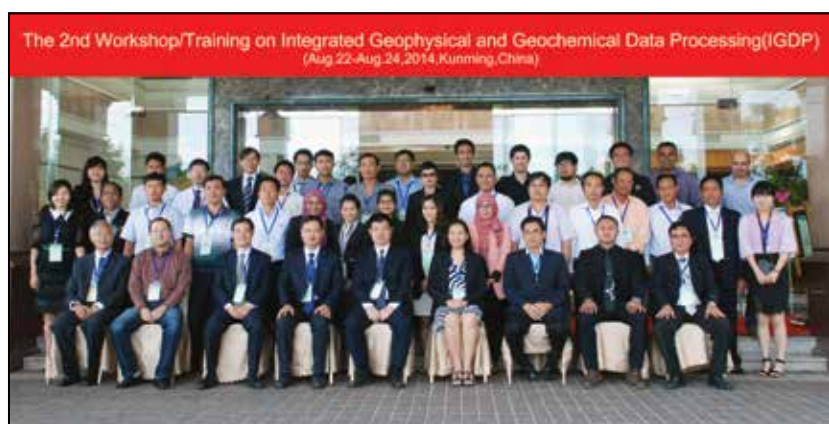
## **GEO-INFORMATION SECTOR**

### **CCOP-CGS CAPABILITY ENHANCING IN INTEGRATED GEOPHYSICAL & GEOCHEMICAL DATA PROCESSING PROJECT (IGDP)**

The CCOP-CGS Capability Enhancing in Integrated Geophysical and Geochemical Data Processing Project (IGDP) started since 2013 under the support of China Geological Survey (CGS). The aim of this project is to keep CCOP Member Countries continuously benefit from modern information technology in geoscientific study and mineral exploration technology in the Member Countries and around the world, based on IGDP – a designed software for regional geophysical and geochemical data processing and mapping in mineral resource assessment and exploration. CGS continues with methodology and software training and case studies in some areas with local data in 2014. The second Workshop/Training of Integrated Geophysical and Geochemical Data Processing (IGDP) Project was held on August 22-24, 2014 in Kunming, China.

#### **The 2<sup>nd</sup> Workshop/Training of Integrated Geophysical and Geochemical Data Processing (IGDP) Project**

The meeting held on August 22-24, 2014 in Kunming, China was hosted and funded by China Geological Survey (CGS) in cooperation with CCOP. This activity was co-organized by the Development and Research Center (DRC), CGS and Yunnan Information Center of Geology and Mineral Resources (YICGMR). There were 45 participants in the workshop/training from CCOP and ASEAN countries (Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam) and other countries (People's Republic of Korea, Pakistan, Peru and Sri Lanka).



*Participants at the 2<sup>nd</sup> Workshop/Training of Integrated Geophysical and Geochemical Data Processing (IGDP) Project*

During the discussion, participants from CCOP and ASEAN Countries expressed their need of a week-long intensive hands-on training on the use of RGIS-IGDP software, together with on-site case studies. All the participants received a package of the RGIS-IGDP Software as well as certificate of participation at the end of the workshop.

## ASEAN HARMONIZED GEOLOGY PROJECT (ASEAN Seamless Geology Project)

The new initiative on “CCOP-ASEAN Harmonized Geology” project was proposed and endorsed at the 62<sup>nd</sup> CCOP Steering Committee meeting in Chiang Mai, Thailand on 4-6 March 2014 and will be implemented in a cooperating mechanism amongst CCOP, ASEAN and GSJ. Project Goals are 1) Standardization of Geology Legend; 2) Compilation of 1:1 million seamless geology and 3) Development of Data Management System by free and open sources as web-GIS. Participating countries include Brunei, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Lao, Singapore, Thailand and Vietnam. The planned activities in 3 years (2014-2016) include 1) Workshops for Harmonization of geologic symbols, OneGeology specification, Web GIS technology, data dissemination and analysis and 2) Meetings for Compilation, discussion, exchange knowledge and experience on the geological setting of the region.

To facilitate the implementation of this project, the project’s Working Group has been formed and held two facilitation meetings on October 21, 2013 in Sendai, Japan and March 3, 2014 in Chiang Mai, Thailand with participants from CCOP Member Countries, to discuss on the concept, task group and plan. Resource persons for the project are being trained in Web-GIS training courses by GSJ experts in Philippines, Indonesia, Cambodia, Laos, Vietnam and Myanmar. The Kick-off meeting was also held on July 16-17, 2014 in Bangkok, Thailand with attendance by CCOP Member Countries.

### CCOP/ASEAN Kick-off meeting of Harmonized Geology Project

On July 16-17, 2014, CCOP coordinated with DMR of Thailand to hold the kick-off meeting of the CCOP-ASEAN Harmonized Geology Project in Bangkok, Thailand with 21 participants, including 17 Web-GIS trained experts and resources persons from Member Countries: Cambodia, Indonesia, Japan, Lao PDR, Vietnam, and 4 CCOPTS staff.

The meeting agreed on 3 important points as follows: 1- Work on harmonization not compilation; 2- Fix responsible persons for ASEAN & CCOP (at least 2 from each MC); 3- Start from ASEAN then extent to CCOP. The latest versions of national geological maps were recommended to MCs to be used as input maps for this project. A template worksheet was prepared by **Dr. Yutaka Takahashi**, resource person from Japan.



*Discussion on how to implement the geological harmonization at boundaries among Member Countries.*

### CCOP BOOK PROJECT: “STONE HERITAGE IN EAST AND SOUTHEAST ASIA”



*The 2<sup>nd</sup> Business Meeting of Project “Stone Heritage in East and Southeast Asia”*

The project was proposed by Japan at the 60<sup>th</sup> CCOP Steering Committee in March 2013. A network of National Coordinators in CCOP Member Countries has been established, acting as Global Heritages Stone Resource (GHSR) and Heritages Stone Task Group (HSTG). Guidelines for Authors and a draft manuscript of the Japan Chapter have been prepared by the project leader, Dr. Hirokazu Kato and Japan national coordinators and have been circulated to National Coordinators of all participating Member Countries. Two business meetings of the Heritages Stone Task Group have been held in conjunction with CCOP Annual Sessions on October 22, 2013 in Sendai, Japan and October 22, 2014 in Kokopo, Papua New Guinea, respectively. The book is planned to be published in early 2015.

## CCOP BOOK PROJECT: “BEST PRACTICES ON MINE DECOMMISSIONING AND REHABILITATION PLAN IN CCOP REGION”

The project was proposed by the Philippines at the 48<sup>th</sup> Annual Session and 59<sup>th</sup> Steering Committee last November with updates to be reported the 60<sup>th</sup> Steering Committee. A network of National Coordinators in CCOP Member Countries has been established. The Philippines is in communication with CCOP Member Countries on availability of documents and possibility of co-support. CCOPTS is in discussion with MGB of Philippines in order to organize a kick-off meeting in Manila during the 2<sup>nd</sup> quarter of 2015.

## CCOP HIGH EDUCATION SUPPORT NETWORK PROGRAM

The CCOP High Education Support Network Program was proposed by a group of professors from Yamaguchi University (Japan), Asian Institute of Technology (AIT, Thailand) and CCOPTS. Following the first facilitation meeting on October 21, 2013 in Sendai, Japan, there were two facilitation meetings of this program organized in conjunction with the CCOP Steering Committee meetings.

### The 2<sup>nd</sup> facilitation meeting of CCOP High Education Support Network Program

The second facilitation meeting of the CCOP High Education Support Network Program was held on March 3, 2014 in Chiang Mai, Thailand, in conjunction with the 62<sup>nd</sup> CCOP Steering Committee meeting. There were totally 11 participants from CCOP Member Countries (Japan, Indonesia, Malaysia, Thailand and Vietnam). During the meeting, participants listened to the project introduction, given by **Prof. Dr Koji Wakita**, and discussed on cooperation method and activities. Other Member Countries in CCOP Network are welcomed to participate and facilitate further connection for the network.



*The 2<sup>nd</sup> facilitation meeting of CCOP High Education Support Network Program*

### The 3<sup>rd</sup> facilitation meeting of CCOP High Education Support Network Program

The third facilitation meeting was organized on October 23, 2014 in Kokopo, Papua New Guinea, in conjunction with the thematic session of the 50<sup>th</sup> CCOP Annual Session. The meeting was attended by all participants who attended the thematic session. During the meeting, keynote speakers from KIGAM, Republic of Korea, introduced Education and Training Programs in IS-Geo of KIGAM, which will be offered regularly for the trainees from CCOP Member Countries. Outreaches of Coastal Researches of KIGAM were also mentioned, emphasizing the role of KIGAM/IS-Geo in the CCOP High Education Support Network.

## AUTOMATED MANAGEMENT AND OPERATION SYSTEM (AMOS)

At the 62<sup>nd</sup> CCOP Steering Committee, the China delegation informed the Meeting that the overall design of AMOS is already completed. The first two sub-systems, the administration and financial systems, are put in place, and ready to be tested. China will discuss with CCOP TS for the ways to test these systems.

## FELLOWSHIPS AND GRANTS

### East Asia Geoscience and Environmental Research (EAGER) Project

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 the year 2014, Papua New Guinea, being the host country of the 2014 CCOP Annual Session, has requested for postponement of EAGER fellowship grant to 2015, which the donor has agreed.

# MEETING AND MISSIONS

## Mission to visit Member Countries and to promote CCOP membership

- 10-11 March 2014, CCOPTS Regional Expert **Dr. Nguyen Thi Minh Ngoc** attended as speaker at the 13<sup>th</sup> GeoSEA Congress and GeoMyanmar 2014 conferences in Yangon, Myanmar. GEOSEA Congress is a premier geoscientific event in the region and has been well attended by the geoscientific community world-wide. A presentation on “Geo-Hazard Assessment & Mitigation in East & Southeast Asia Role of Regional Organization” has also been presented, in order to make CCOP more visible in the region and to seek for cooperation opportunities with geoscientific agencies.
- 5–9 June 2014, Director CCOPTS **Dr. Adichat Surinkum** made a courtesy visit Mongolia for promoting the participation as member country. Geological Survey, Mineral Resources Authority of Mongolia, will start to join the activity of CCOP as an invited participant first and assigned Director **Oyuntsetseg Dayandorj** of Regional Geological Division as a contact person.
- 30 June-2 July 2014, CCOPTS Dr. Adichat Surinkum and CCS-M Project Coordinator **Mr. Simplicio Caluyong** made a courtesy visit to the new PR of Indonesia, **Dr. Surono** at the Geological Agency office in Jakarta, Indonesia.
- 3-4 July 2014, CCOP TS **Dr. Adichat Surinkum** has courtesy visited new Permanent Representative of Cambodia to CCOP, H.E. Cheap Sour at General Department of Petroleum, Ministry of Mines and Energy in Phnom Penh, Cambodia.
- 9-12 August 2014, CCOP TS **Dr. Adichat Surinkum** has meeting on future cooperation with **Dr. Eikichi Tsukuda**, Chairman, CCOP Steering Committee, and Permanent Representative of Japan to CCOP at Geological Survey of Japan (GSJ) National Institute of Advanced Industrial Science and Technology (AIST) office in Japan.
- 15 September 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** visited the Department of Mineral Fuels, Thailand for a Meeting on a new CCOP – DMF Energy Reserves Reporting Project. The Project plans to conduct a series of capacity building workshops, field works and form a Working Group that will facilitate the development of the oil and gas reserves reporting guidelines and implementation of reporting standard in the CCOP region.

## Mission to visit Cooperating Countries/Organizations and ASEAN Secretariat

- 16 February 2014, Director CCOPTS **Dr. Adichat Surinkum** made a courtesy visit to ASEAN Secretariat in Jakarta, Indonesia to discuss on cooperation opportunities within CCOP-ASEAN framework, e.g. Seamless Geology Project.
- 25-27 March 2014, Director CCOPTS **Dr. Adichat Surinkum** attended the EuroGeoSurveys’ 36<sup>th</sup> General Meeting, the Directors Workshop and the EGS-OAGS Workshop in Brussels, Belgium. The CCOPTS Director presented the Role of CCOP toward the 50<sup>th</sup> Anniversary in 2016 and in view of the increasing corporation among the Geological Surveys of Europe and others, i.e. USGS, CGS, World Bank.
- 28-30 August 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** visited LEMIGAS office for a planning meeting with CCS-M Indonesia Case Study team”, Jakarta, Indonesia. The PR of Indonesia recently transferred the coordination of CCS-M case study from GAI to LEMIGAS. The new management of LEMIGAS was also updated about the developments and future plans of CCS-M.

## Mission trip for participation in Conferences / Organizations / Meetings:

- 15-17 January 2014, Director CCOPTS **Dr. Adichat Surinkum**, attended as honored speaker at the seminar on “Knowledge Management: Issues and Challenges” in Petchaburi Province, Thailand. The CCOPTS Director introduced and explained the process involved in capturing and sharing geoscience knowledge assets, both tacit and explicit.
- 4-8 April 2014, Director CCOPTS **Dr. Adichat Surinkum** visited the field project “Landslide Prevention and Rehabilitation Project” which is one of the best practices of DMR activity on landslide mitigation project in Tak and Chiang Mai province this year. Refer to CCOP work plan 2014 on community-based landslide mitigation project, it aims to share and discuss on the use of prevention techniques among DMR staffs and CCOP experts and also to promote public awareness of geosciences.
- 22-24 April 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** attended the 4<sup>th</sup> EAGE CO<sub>2</sub> Geological Storage Workshop in Stavanger, Norway.
- 29 April - 2 May 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** attended UNECE Expert Group on Resource Classification, Fifth Session in Geneva, Switzerland.

- 6-11 May 2014, CCOPTS Regional Expert **Dr. Nguyen Thi Minh Ngoc** attended the 2014 China-ASEAN Mining Cooperation Forum and Exhibition held in Nanning, China.
- 14-17 May 2014, Director CCOPTS **Dr. Adichat Surinkum** attended the 77th ASCOPE National Committees and Associated meeting at Pan Pacific, Singapore. During the meeting, CCOPTS and PETRAD discussed and agreed upon how to promote a new type of activity in CCOP MCs based on the new initiatives.
- 16-20 June 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** attended the 9<sup>th</sup> Asia Clean Energy Forum in Manila, Philippines.
- 26-28 June 2014, Director CCOPTS **Dr. Adichat Surinkum** attended the JICA WebGIS Workshop in Hanoi, Vietnam. He also visited General Department of Geology and Minerals of Vietnam (GDGMV) and Vietnam Institute of Geosciences and Mineral Resources (VIGMR) to outline the details of upcoming CCOP projects being hosted by Vietnam.
- 6-11 July 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** and Manager, Project Operation and Information **Ms. Marivic P. Uzarraga** attended the WebGIS Training for Myanmar at Naypyitaw, Myanmar that was conducted by experts from GSJ. While in the Training, a coordination meeting was conducted with GSJ experts for the preparation of CCS-M T5.
- 30-31 July 2014, CCOPTS Director **Dr. Adichat Surinkum** attended "Opening-Closing Ceremony of Brainstorming and Disseminate Knowledge about the Survey and Evaluate Potential Areas of Basalt Stones for Construction Purpose", organized by Department of Mineral Resources in Ubon Ratchathane and Sri Saket, Thailand. He made a presentation on "Infrastructure connecting ASEAN countries, a feasibility study".
- 27-28 August 2014, CCOPTS **Dr. Adichat Surinkum** attended the 11<sup>th</sup> ASOMM Meeting of the Working Group on Mineral Information and Database at Sokhalay Angkor Hotel, Siem Reap, Cambodia.
- 28-30 August 2014, CCOPTS Director **Dr. Adichat Surinkum** attended 11<sup>th</sup> Malaysia-Thailand Border Joint Geological Survey Committee Meeting, Phang-Nga, Thailand. This project was collaborated between Department of Mineral Resources (DMR) and the Minerals and Geoscience Department Malaysia (JMG). The meeting aims to consider the final report of the Project in year 2014 and the work plan in year 2015.
- 21 November 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** and CCOPTS Regional Expert **Dr. Nguyen Thi Minh Ngoc** attended the ENRECA Project Concluding Conference on November 21, 2014 in Hanoi, Vietnam. Aims of the meeting are for presenting the results and experiences obtained during the implementation of the Capacity Building Project entitled "Research and Education for Integrated Analysis of Geological Basins in Vietnam" funded by the Danish International Development Agency (DANIDA) through its ENRECA (Enhancement of Research Capacity) program.
- 25-27 November 2014, CCS-M Project Coordinator **Mr. Simplicio P. Caluyong** attended 40th ASCOPE Council Members Meeting back to back with 78<sup>th</sup> ASCOPE National Chairpersons Meeting in Bali & C1S1 Coordination Meeting with Indonesia Case Study in Jakarta, Indonesia.
- 9 December 2014, CCOP TS **Dr. Adichat Surinkum** has workshop Sustainable Water and Environment Management organized by UNESCO-Institute for Water Education (UNESCO-IHE) and the Asian Institute of Technology (AIT) in Phatumthanee province, Thailand.

# PUBLICATIONS

The following publications were produced during the year. The workshop and seminar reports and proceedings of the CCOP CO<sub>2</sub> Storage Mapping Program (CCS-M) were published on the CCOP website.

## General Publication

### **CCOP E-Newsletters**

These e-news are brought to you by CCOP and are meant to give you the latest news and information on its activities around the region and worldwide. CCOP e-news replaces the former printed CCOP Newsletter and will be issued several times each year.

#### **CCOP E-Newsletters Vol 5 No 1, February 2014**

The CCOP E-News February 2014 issue is now available for download from this link: [http://www.ccop.or.th/download/e-news/CCOP\\_e-news2014-02v5n1.pdf](http://www.ccop.or.th/download/e-news/CCOP_e-news2014-02v5n1.pdf). It is of 16 colored pages, and 1MB file size.

#### **CCOP E-Newsletter Vol 5 No 2, June 2014**

The CCOP E-News June 2014 issue is now available for download from this link: [http://www.ccop.or.th/download/e-news/CCOP\\_e-news2014-06v5n2.pdf](http://www.ccop.or.th/download/e-news/CCOP_e-news2014-06v5n2.pdf). It is of 3 colored pages, and less than 1MB file size.

#### **CCOP E-Newsletter Vol 5 No 3, November 2014**

The CCOP E-News November 2014 issue is available for download from this link, [http://www.ccop.or.th/download/e-news/CCOP\\_e-news2014-11v5n3.pdf](http://www.ccop.or.th/download/e-news/CCOP_e-news2014-11v5n3.pdf). It is of 20 colored pages, and 1MB file size.

## **CCOP Annual Session Proceedings**

### **Proceedings of the 49<sup>th</sup> CCOP Annual Session Part I**

The Proceedings of the 49<sup>th</sup> CCOP Annual Session held in Sendai, Japan on 20-24 October 2013 is available for download from this link, <http://www.ccop.or.th/download/as/49as1.pdf>. The proceedings include the minutes of the session, CCOP Progress Report and its Workplan, Member and Cooperating Countries Reports as well as Cooperating Organizations Reports, among others. This proceedings is in PDF format, with 328 pages, and is of 7.8MB filesize.

### **Publication of the 49<sup>th</sup> CCOP Annual Session Part II**

This publication is the proceedings of the Thematic Session, "Geohazards: Impacts and Challenges for Society Development in Asian Countries" held at the 49<sup>th</sup> CCOP Annual Session on 22-23 October 2013, Sendai, Japan. This has been published as Geological Survey of Japan Open-File Report, No. 609, by Geological Survey of Japan (GSJ), National Institute of Advanced Industrial Science and Technology, October 1, 2014. This contains 24 full papers presented at the session, from Member and Cooperating Countries of CCOP. This 220 pages publication is available both in printed book, and CD-ROM, and its 16MB PDF file can be downloaded from this link, <http://www.ccop.or.th/download/as/49as2.pdf>.

## **CCOP Steering Committee Meeting Reports**

### **Report of the 61<sup>st</sup> CCOP Steering Committee Meeting**

Report including the minutes of the Steering Committee Meeting held in 25-26 October 2013, Sendai, Japan, has been published electronically in PDF format.

### **Report of the 62<sup>nd</sup> CCOP Steering Committee Meeting**

Report including the minutes of the Steering Committee Meeting held in Chiangmai, Thailand on 4-6 March 2014 has been published electronically in PDF format.

## **Technical Activities Reports/Proceedings**

### **CCOP Guideline on the Methodologies for Selecting Geological Carbon Dioxide (CO<sub>2</sub>) Storage and Estimation of Storage Capacities**

This publication introduces the guiding principle adopted by CCOP on methodologies for selecting geological CO<sub>2</sub> storage and estimation of storage capacities, gives a brief overview of the current status of storage capacity assessments per CCOP country, and provides some details regarding the development of the Guideline, such as the workflow and adopted capacity estimation calculation methods. This can be downloaded from CCS-M webpage, in particular from this link, <http://www.ccop.or.th/ccsm/details/CCOP-GUIDELINE-on-the-Methodologies-for-Selecting-Geological-CO2-Storage-and-Estimation-of-Storage-Capacities--Download-here->

## FINANCIAL HIGHLIGHTS

From January 1 to December 31, 2014, Member Countries' total cash contributions amounted to **USD 310,000.00**, that consists of Cambodia (USD 5,000), China (USD 50,000), Indonesia (USD 40,000), Japan (USD 50,000), Republic of Korea (USD 60,000), Lao PDR (USD 10,000), Malaysia (USD 50,000), Papua New Guinea (USD 10,000), Timor-Leste (USD 10,000), and Vietnam (USD 25,000). Thailand cash contribution for 2014 was received in advance since 2013 (USD 39,111.92). The expected cash contribution to receive from Philippines for 2014 is USD 40,000 (Table 1).

Table 1. Cash Contributions of Member Countries for 2013-2014  
(Ending 31 December 2014)

Member Countries	2013 Contribution Received in 2013	2014 Contribution Received in 2013	2014 Contribution Received in 2014	2014 Contribution Expected to Receive
Cambodia	5,000.00		5,000.00	
China	50,000.00		50,000.00	
Indonesia	40,000.00		40,000.00	
Japan	40,000.00		50,000.00	
Republic of Korea	60,000.00		60,000.00	
Lao PDR	10,000.00		10,000.00	
Malaysia	50,000.00		50,000.00	
Papua New Guinea	10,000.00		10,000.00	
Philippines	40,000.00			40,000.00
Singapore				
Thailand	40,000.00	39,111.92	*	
Timor-Leste	10,000.00		10,000.00	
Vietnam	25,000.00		25,000.00	
<b>Total</b>	<b>380,000.00</b>	<b>39,111.92</b>	<b>310,000.00</b>	<b>40,000.00</b>

\*Thailand cash contribution for 2014 was received in advance since 2013

In addition to Member Countries' contributions, the amount of **USD 97,802.17** earned from the management of projects during January-December 2014 period which from "Contribution from Norway through the Royal Norwegian Embassy (RNE)-Jakarta to CCS-M Program" (USD 60,391.20), "CCOP-PETRAD-DMF Seminar on Pipeline and Production Facilities Integrity Inspection and Management" (USD 4,000.00), "CCOP-GSJ/AIST-MGI DeISEA-II Workshop on Coastal Geology & Hazards" (USD 4,000.00), "CCOP-GSJ/AIST-GAI Groundwater Phase II Meeting" (USD 4,193.90). "Global Carbon Capture and Storage Institute" (GCCSI), Australia for "CCOP-CO2 Storage Mapping Program" (CCS-M) (USD 12,237.72), "CCOP-PETRAD-SINOPEC Seminar on LNG Strategy, Policy, Technology and Systems with particular emphasis on the role of LNG for a reduced carbon footprint" (USD 6,000.00), "CCOP-KIGAM-JPDC 6<sup>th</sup> Jeju Water World Forum" (USD 2,809.41), "4<sup>th</sup> South East Asian Industrial Minerals Conference" (USD 1,000.00), and "UNEP-CCOP-GSJ/AIST Workshop on the Risk Management of Mercury in and around the Artisanal/Small-Scale Gold Mining Sites" (USD 3,169.94) (**Table 2**).

Other incomes during the period amounted to **USD 584.03** from interest earned (USD 1,769.65), Processed from Sale of Publications (USD -), Loss on Conversion Currencies (USD -1,497.09), and miscellaneous incomes (USD 311.47). The total income during the period was **USD 487,498.12**. The expenditure of **USD 463,629.88** was incurred from operation and administrative support. The cash balance as of ending December 2014 amounted to **USD 718,312.26**.

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 CCOP TS Building, DMR Complex, Rama VI Road, Bangkok, Thailand.

Table 2. Management Income from Execution of Project and Activity (January 1 - December 31, 2014)

Funding Source	Activities	Country	Period	Amount (USD)
Norway through RNE-Jakarta	Contribution from Norway through the Royal Norwegian Embassy (RNE)-Jakarta to CCS-M Program	Bangkok, Thailand	December 1, 2013 – December 31, 2014	60,391.20
PETRAD	CCOP-PETRAD-DMF Seminar on Pipeline and Production Facilities Integrity Inspection and Management	Bangkok, Thailand	January 28-29, 2014	4,000.00
GSJ/AIST	CCOP-GSJ/AIST-MGI DeISEA-II Workshop on Coastal Geology & Hazards	Bandung, Indonesia	March 16-22, 2014	4,000.00
GSJ/AIST	CCOP-GSJ/AIST-GAI Groundwater Phase II Meeting	Bandung, Indonesia	March 18-20, 2014	4,193.90
GCCSI	CCOP-CO2 Storage Mapping Program (CCS-M)	Bangkok, Thailand	1 April - 30 June 2014	12,237.72
PETRAD	CCOP-PETRAD-SINOPEC Seminar on LNG Strategy, Policy, Technology and Systems with particular emphasis on the role of LNG for a reduced carbon footprint.	Beijing, China	June 11-13, 2014	6,000.00
KIGAM	CCOP-KIGAM-JPDC 6 <sup>th</sup> Jeju Water World Forum	Jeju, Republic of Korea	October 6-8, 2014	2,809.41
Metal Bulletin	4 <sup>th</sup> South East Asian Industrial Minerals Conference	Bangkok, Thailand	November 11-14, 2014	1,000.00
GSJ/AIST	UNEP-CCOP-GSJ/AIST Workshop on the Risk Management of Mercury in and around the Artisanal/Small-Scale Gold Mining Sites	Bangkok, Thailand	November 20-22, 2014	3,169.94
<b>Total Project Management Income</b>				<b>97,802.17</b>
<b>Net Total Project Management Income for Budget Year 2014</b>				<b>97,802.17</b>

Target Project Management Income for year 2014, USD 79,500.00.

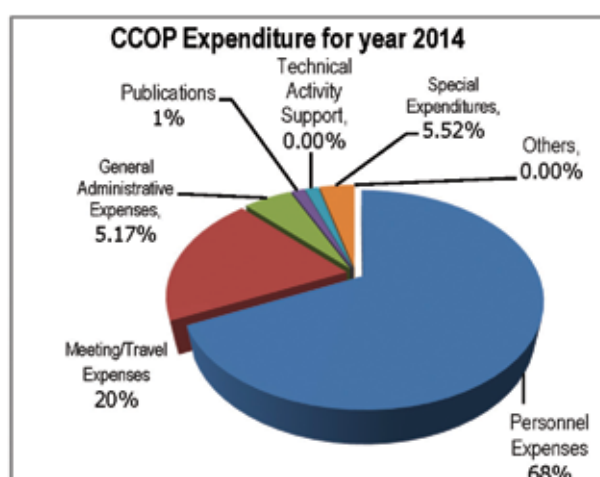
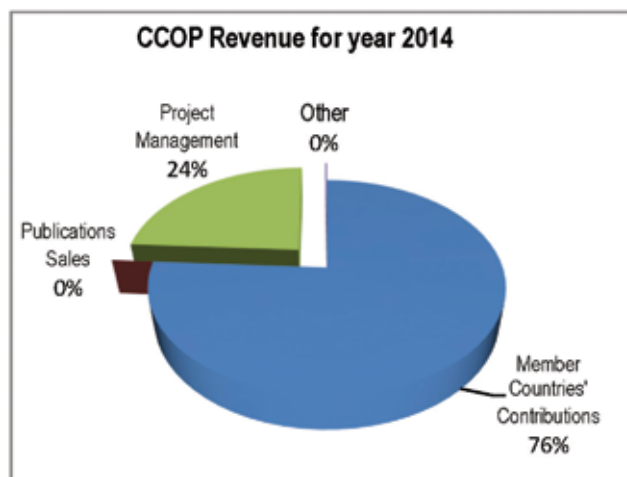


Table 3: CCOP Financial Statement for the year ended 31 December 2014 (amount in US Dollars)

Description	2013		2014	
	USD	%	USD	%
<b>Fund Balance</b>	<b>781,055.00</b>		<b>832,258.00</b>	
<b>Income:</b>				
<i>Member Countries' Contributions</i>	419,111.92	85.72	310,000.00	875.91
<i>Publications sales</i>	-	-	-	-
<i>Project management</i>	79,541.01	816.27	97,802.17	23.95
<i>Others</i>	(9,720.19)	(1.99)	584.03	0.14
<b>Total Income</b>	<b>488,932.74</b>	<b>100.00</b>	<b>408,386.20</b>	<b>100.00</b>
<b>Expenditures :</b>				
<i>Personnel expenses</i>	281,574.33	63.81	315,138.15	67.97
<i>Meeting / travel expenses</i>	89,373.61	20.25	91,674.22	19.77
<i>General administrative expenses</i>	31,966.95	7.24	24,814.13	5.35
<i>Publications</i>	5,741.10	1.30	6,699.44	1.45
<i>Technical activity support</i>	3,301.18	0.75	7,091.51	1.53
<i>Special expenditures</i>	29,297.03	6.65	18,212.43	3.93
<i>Others</i>	-	-	-	-
<b>Total Expenditure</b>	<b>441,254.20</b>	<b>100.00</b>	<b>463,629.88</b>	<b>100.00</b>
<i>Income over/(under) expenses</i>	47,678.54		(55,243.68)	
<i>Total Fund Balance before adjustment.</i>	828,733.54		777,014.32	
<i>Adjusting entries</i>				
<i>Unrealized gain/(loss) on exchange rate for Retained Earning</i>	3,524.46		1,306.05	
<i>Tax payable</i>	-		-	
<b>Year-end Balance</b>	<b>832,258.00</b>		<b>778,320.37</b>	
<i>Adjustment to reflect actual cash inflow/(outflow) :</i>				
<i>Received in Advance BGR</i>			(3,862.96)	
<i>Office equipment (net)</i>	(68,280.86)		(50,316.38)	
<i>Advance</i>	(3,047.45)		(6,996.06)	
<i>Tax deductible</i>	1,190.14		1,167.29	
<b>Year-end Cash Balance</b>	<b>762,119.83</b>		<b>718,312.26</b>	

Table 4: Project Financial Statement: CCOP-CCS-M Fund for the year ended 31 December 2014 (amount in US Dollars)

Description	CCS-M Fund	CCS-M Fund
	2013 (USD)	2014 (USD)
<b>Fund Balance</b>	-	<b>860,078.07</b>
<b>Income :</b>		
<i>Received from GCCSI</i>	287,523.00	165,209.16
<i>Received from RNE-Jakarta</i>	868,391.40	-
<i>Others</i>	(3,023.10)	(439.77)
<b>Total Income</b>	<b>1,152,891.30</b>	<b>164,769.39</b>
<b>Expenditures :</b>		
<i>Technical Activities Expenses</i>	294,857.71	543,586.28
<b>Total Expenditure</b>	<b>294,857.71</b>	<b>543,586.28</b>
<i>Income over/(under) expenses</i>	858,033.59	(378,816.89)
<i>Adjusting entries :</i>	-	-
<i>Unrealized gain/(loss) on exchange rate for Retained Earning</i>	2,044.48	133.74
<b>Year-end Balance</b>	<b>860,078.07</b>	<b>481,394.92</b>
<i>Adjustment to reflect actual cash inflow/(outflow):</i>	-	-
<i>Tax deductible</i>	-	22.57
<i>Advance</i>	(5,261.56)	(10,002.19)
<i>Remittance to CCOP General Fund</i>	-	-
<b>Year-end Cash Balance</b>	<b>854,816.51</b>	<b>471,415.30</b>

# CCOP COOPERATING COUNTRIES AND REPRESENTATIVES (15)

## AUSTRALIA:

### **Prof. Clinton Bruce Foster**

Representative of Australia to CCOP  
Chief, Petroleum & Marine Division  
Geoscience Australia  
G.P.O. Box 378, Canberra 2601  
Australia

## BELGIUM:

### **Prof. Dr. Ir. Léon Dejonghe**

Representative of Belgium to CCOP  
Geologist Director  
International Cooperation  
Geological Survey of Belgium  
Royal Belgian Institute of Natural  
Sciences  
13 Jenner Street, B-1000 Brussels  
Belgium

## CANADA:

### **Dr. Philip R. Hill**

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  
Vice-Chairperson, CCOP Advisory  
Group  
Senior Geophysical Adviser  
Department of Geophysics  
Geological Survey of Denmark and  
Greenland (GEUS)  
Øster Voldgade 10, DK-1350  
Copenhagen K, Denmark

## FINLAND:

### **Prof. Dr. Elias Ekdahl**

Director-General  
Geological Survey of Finland (GTK)  
P.O. Box 96, FI-02151 Espoo  
Finland

## FRANCE:

### **Mr. Jean Claude Guillemeau**

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

## GERMANY:

### **Ms. Franca Schwarz**

Chairman, CCOP Advisory Group  
Representative of Germany to  
CCOP  
Head of Sub-Department, Int'l Coop.  
Federal Institute for Geosciences  
and Natural Resources (BGR)  
Stilleweg 2, Post Box 510153  
D-30655 Hannover, Germany

## THE NETHERLANDS:

### **Mr Cornelis A. Bons**

Representative of The Netherlands  
to CCOP  
Specialist Advisor, Southeast Asia  
Deltares  
Boussinesqweg 1, 2623 HV Delft;  
P.O. Box 177, 2600 MH Delft  
The Netherlands

## NORWAY:

### **Mr. Per Blystad**

Representative of Norway to CCOP  
Senior Geologist, NPĐ  
Norwegian Petroleum Directorate  
Prof. Olav Hanssensvei 10  
P.O. Box 600, N-4003 Stavanger  
Norway

## POLAND:

### **Dr. Witold Szczucinski**

Representative of Poland to CCOP  
Adjunct (Associate Professor)  
Institute of Geology  
Adam Mickiewicz University in  
Poznan  
Makow Polnych 16  
61-606 Poznan, Poland

## RUSSIAN FEDERATION:

### **Dr. Elena A. Konstantinovskaia**

Representative of Russian  
Federation to CCOP  
Senior Researcher  
Geological Institute  
Russian Academy of Sciences  
7, Pyzhevsky per., 119017 Moscow  
Russian Federation

## SWEDEN:

### **Dr. Las Persson**

Representative of Sweden to CCOP  
Director  
Geological survey of Sweden (SGU)  
P.O. Box 670, SE-75128  
Uppsala, Sweden

## UNITED KINGDOM:

### **Dr Mike Patterson**

Representative of the U.K. to CCOP  
Director of Corporate Strategy  
British Geological Survey (BGS)  
Keyworth, Nottingham, NG12 5GG  
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 (14)

## **ASCOPE:**

**Mr. Victorino S. Bala**  
Secretary-in-Charge, ASCOPE  
ASEAN Council on Petroleum  
1st Floor, PNOB Building 6  
Energy Center, Merritt Road  
Fort Bonifacio, Taguig City  
Philippines 1634

## **CIFEG:**

**Mr. François Pinard**  
Deputy Director  
International Center for Training  
and Exchanges in the Geoscience  
(CIFEG)  
3 Avenue Claude Guillemin  
B.P. 6517, 45065 Orléans Cedex 2  
France

## **CPC:**

**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:**

**Luca Demicheli**  
Secretary-General, EuroGeoSurveys  
The Geological Surveys of Europe  
36-38, Rue Joseph II  
1000 Brussels, Belgium

## **GETECH:**

**Dr. J. Derek Fairhead**  
President & Founder of GETECH  
Prof. of Applied Geophysics  
Geophysical Exploration Technology  
(GETECH)  
Kitson House, Elmete Hall  
Elmete Lane, Roundhay  
Leeds, LS8 2LJ, United Kingdom

## **IOC:**

**Dr. Wendy Watson-Wright**  
Assistant Director-General and  
Executive Secretary  
Intergovernmental Oceanographic  
Commission (IOC)  
IOC/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, Bandaranaike Memorial  
International Conference Hall  
(B.M.I.C.H.), Baudhaloka Mawatha  
Colombo 7, Sri Lanka

## **IUGS:**

**Prof. Dr. Roland OBERHÄNSLI**  
President  
IUGS Executive Committee  
International Union of Geological  
Sciences (IUGS)  
Institute of Earth & Environmental  
Sciences  
Karl-Liebknecht-Str. 24-25, HS-27  
14476 Potsdam OT Golm  
GERMANY

## **PETRAD:**

**Mr. Claes Reksten**  
Project Director  
Petroleum Management and  
Administration (PETRAD)  
Prof. Olav Hanssens vei 10  
P.O. Box 598, NO-4003 Stavanger  
Norway

## **UN-ESCAP:**

**Shamshad Akhtar**  
Executive Secretary  
UN-ESCAP, United Nations Building  
Rajdamnern Nok Avenue  
Bangkok 10200, Thailand

## **UNEP:**

**Mr Kaveh Zahedi**  
Regional Director and  
Representative for Asia and the  
Pacific  
United Nations Environment  
Programme (UNEP)  
2nd Fl., Block A  
United Nations Building  
Rajdamnern Nok Avenue  
Bangkok 10200, Thailand

## **UNESCO:**

**Dr. R. Jayakumar**  
Programme Specialist & Chief –  
Natural Sciences  
UNESCO Bangkok  
Asia and Pacific Regional Bureau for  
Education  
920 Sukhumvit Road, Prakanong,  
Klongtoey Bangkok 10110, Thailand  
Tel.: +66-2-3910577 X 163  
Fax: + 66-2-3910866

## **UKM**

**Prof. Mazlin bin Mokhtar**  
Director  
Southeast Asia Disaster Prevention  
Research Institute (SEADPRI)  
Universiti Kebangsaan Malaysia  
(UKM)  
43600 Bangi, Selangor D.E.  
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.

# 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 Xiongli**

Honorary Adviser to CCOP

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

Honorary Adviser to CCOP  
Acting Director  
Department of Sciences &  
Technology and International  
Cooperation  
*China Geological Survey*  
45 Fuwai Street, Xicheng District  
*Beijing, P.R. China*

## INDONESIA:

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

Honorary Advisor to CCOP

## JAPAN:

### **Dr. Yoshihiko Shimazaki**

Honorary Adviser to CCOP  
Advisor, Geological Survey of Japan  
3-2-36 Nishiazabu, Minato-ku  
*Tokyo 106-0031, 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*

## REPUBLIC OF KOREA:

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

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

## MALAYSIA:

### **Mr. Fateh Chand**

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

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

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

## NORWAY:

### **Dr. Øystein Berg**

Honorary Adviser to CCOP  
Vaganesveien 16,  
4052 Royneberg,  
*Norway*

## THE PHILIPPINES:

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

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

## THE NETHERLANDS:

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

Honorary Adviser to CCOP  
*Kagerdree 188*  
*2172 HR Sassenheim*  
*The Netherlands*

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

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

### **Dr. Jos de Sonnevill**

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, Navamintra Road,  
Bung Khum Bangkok 10240,  
*Thailand*

## UNITED KINGDOM:

### **Dr. Anthony Reedman**

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

## U.S.A.:

### **Dr. Maurice J. Terman**

Honorary Adviser to CCOP  
Scientist Emeritus  
*U.S. Geological Survey*  
917 National Center, Reston  
*VA 20192, U.S.A.*

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

Chairman, CCOP Advisory Group  
Honorary Adviser to CCOP  
9213 Eddy Cove  
*Austin, Texas 78735*  
*USA*

# CCOP STEERING COMMITTEE

## MEMBER COUNTRIES PERMANENT REPRESENTATIVES (13)

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.

### CAMBODIA:

#### **H.E. Mr. Cheap Sour**

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

### CHINA:

#### **Dr. Li Jinfa**

Permanent Representative of China to CCOP  
Deputy Director-General  
China Geological Survey (CGS)  
45 Fuwai Street, Xicheng District  
Beijing 100037  
People's Republic of China.

### INDONESIA:

#### **Dr. Surono**

Permanent Representative of Indonesia to CCOP  
Head, Geological Agency  
Jl. Diponegoro No. 57, Bandung  
40122  
Tel: +62-21 522 8371  
Fax: +62 22 721644

### JAPAN:

#### **Dr Eikichi Tsukuda**

Permanent Representative of Japan to CCOP  
Director-General  
Geological Survey of Japan  
National Institute of Advanced  
Industrial Science and Technology  
Higashi 1-1-1, AIST Central 7,  
Tsukuba Ibaraki 305-8567, Japan

### REPUBLIC OF KOREA:

#### **Dr. Kyu Han Kim**

Permanent Representative of Republic of Korea to CCOP  
President  
Korea Institute of Geoscience and Mineral Resources (KIGAM)  
92 Gwahang-no, Yuseong-gu  
Daejeon 305-350, Republic of Korea

### LAO PDR:

#### **Mr. Khampha Phommakaysone**

Permanent Representative of Lao PDR to CCOP  
Director-General  
Deputy Director-General  
Department of Geology and Minerals  
Ministry of Natural Resources and Environment (MONRE)  
Khounboulom Road, Vientiane  
Lao PDR

### MALAYSIA:

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

Permanent Representative of Malaysia to CCOP  
Director-General  
Minerals and Geoscience  
Department  
20th Floor, Tabung Haji Building  
Jalan Tun Razak  
50658 Kuala Lumpur Malaysia

### PAPUA NEW GUINEA:

#### **Mr Shadrach Himata**

Permanent Representative of Papua New Guinea to CCOP  
Secretary  
Department of Mineral Policy and Geohazards Management  
Private Mail Bag, Port Moresby Post Office, National Capital District  
Papua New Guinea

### THE PHILIPPINES:

#### **Engr. Leo L. Jasareno**

Permanent Representative of Philippines to CCOP  
Director  
Mines and Geosciences Bureau (MGB)  
Department of Environment and Natural Resources (DENR)  
North Avenue, Diliman, Quezon City  
Republic of the Philippines

### SINGAPORE:

#### **Prof. Charles Rubin**

Permanent Representative of Singapore to CCOP  
Head of the Division of Earth Sciences  
Earth Observatory of Singapore (EOS)  
Nanyang Technological University  
50 Nanyang Avenue  
Block N2-01a-15  
Singapore 639798

### THAILAND:

#### **Mr. Supot Jernsawatdipong**

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

### TIMOR-LESTE:

#### **Mr Helio Casimiro Guttereres**

Permanent Representative of Timor-Leste to CCOP  
Project Manager Covalima Mapping & Head of Laboratory of Geology  
Directorate of Geology and Mineral Resources  
Secretary of State for Natural Resources  
Fomento Building, 1st Floor  
Dom Aleixo Corte Real Street,  
Mandarin  
P.O. Box 171, Dili, Timor-Leste

### VIETNAM:

#### **Dr. Nguyen Quoc Thap**

Permanent Representative of Vietnam to CCOP  
Vice-President  
Vietnam Oil and Gas Group  
PETROVIETNAM  
No. 18, Lang Ha Street, Ba Dinh District, Hanoi, Socialist Republic of Vietnam



# **CCOP Annual Report 2014**