

Capacity Building Panel Discussion

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Outline

- Why build capacity
- Where will mining be in the future?
- What are we doing now
- What more can we do

Education and Sustainability

Australian Centre for
Sustainable Mining Practices

- Mining schools, like mines, close
- Sustainability of both depends on addressing:
 - Quantity and quality of graduates
 - Quantity and quality of educators
- Sustainability is all about people

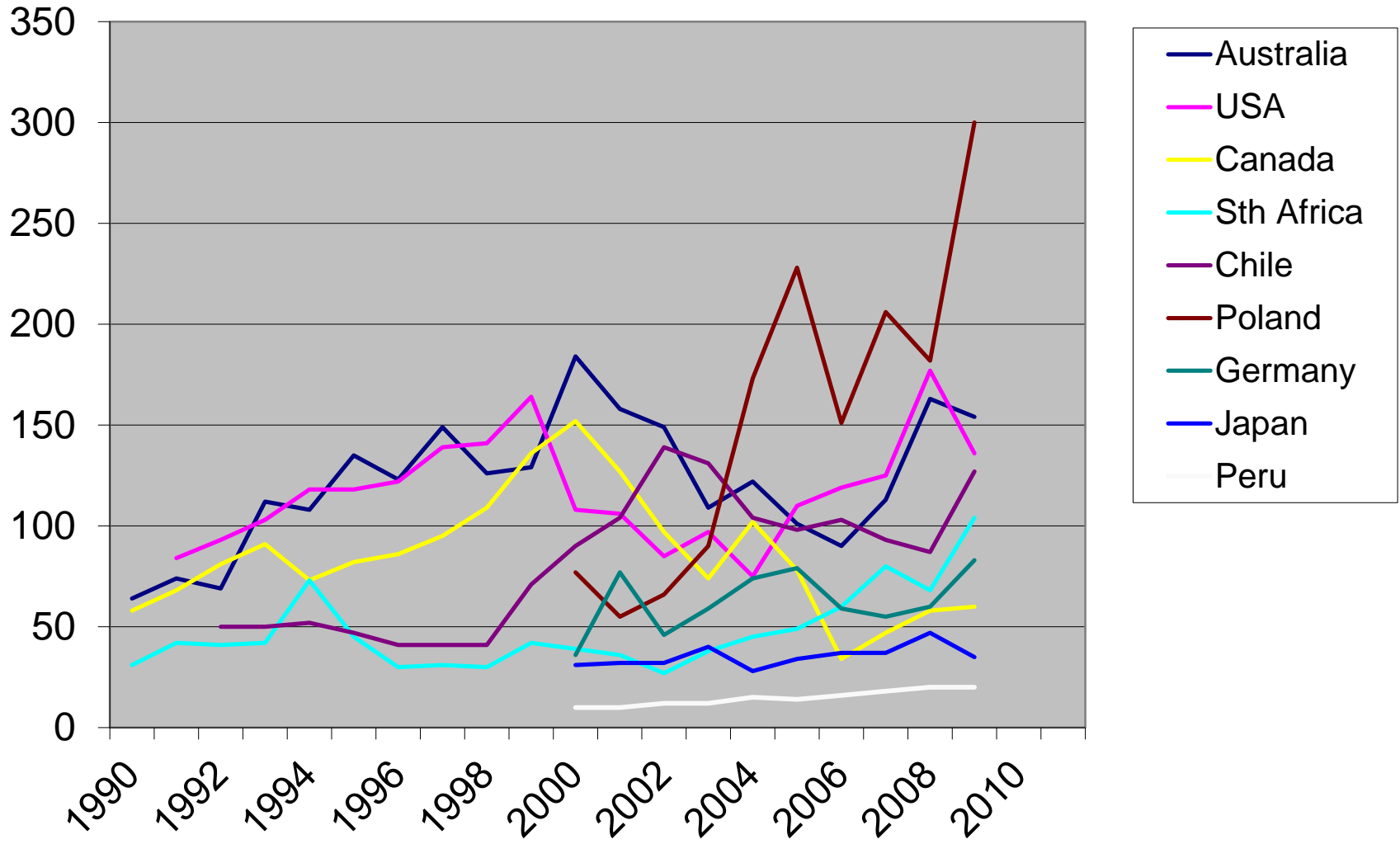
WHY BUILD CAPACITY?

Why Build Capacity

- Global shortage of mining graduates
- Age profile of academics
- Changing epicentres of mining
- Mining company demand
- Technology rapidly evolving
 - Skills become outdated

Mining Engineering Graduate Numbers (to end 2009)

Note: Canada incomplete beyond 2005; US incomplete in 2009



But student shortage not everywhere...

- Peru/Chile
- Vietnam
- China
- India
- Turkey
- Iran

WHERE WILL MINING BE IN THE FUTURE?

Where will mining be in 2020

- South America
- Asia
- Africa
- Pacific
- Other
 - Former USSR
 - Afghanistan?

WHAT IS BEING DONE NOW IN BUILDING CAPACITY?

Mining Education Australia (MEA)

- collaborative teaching program involving UNSW and
 - University of Queensland
 - University of Adelaide
 - Western Australian School of Mines at Curtin University
- common courses in final two years specialising in Mining Engineering
- share teaching resources and expertise, cross-collaborative teaching, project work

Preparing mining engineers today for industry tomorrow



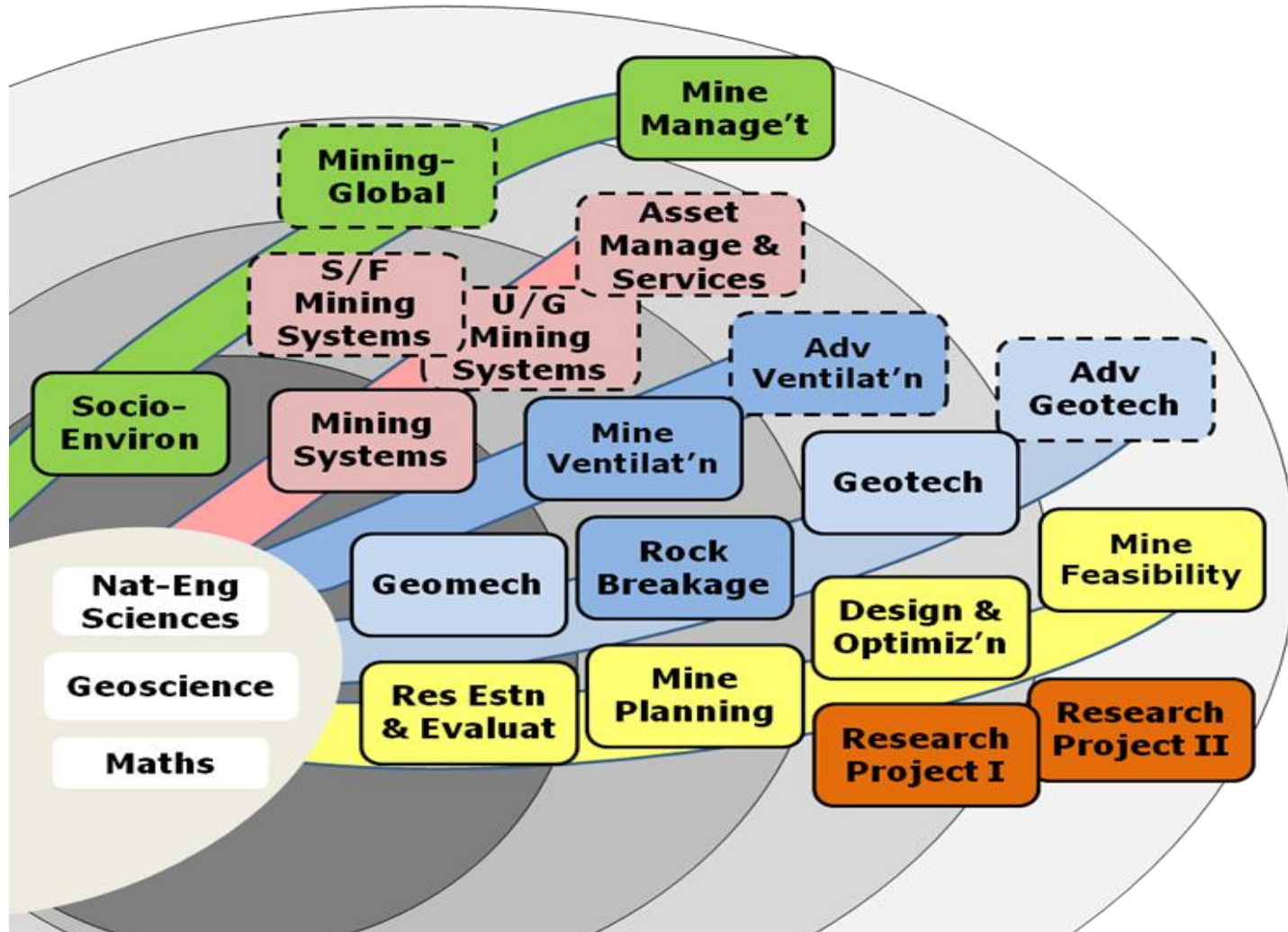
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Australian Centre for Sustainable Mining Practices



One School
World Class
Industry Endorsed
www.mea.edu.au

MEA Mining Curriculum - streams



Industry can and does help....

- Field trip access
- Sponsorship
 - Functions
 - Postgrad students
- Scholarships
- Linking with academic staff for research
- Industrial/vacation training
- Employing students including postgrads
- Industry chairs



Teaching Innovations

- Block teaching
- Keynote lectures/learning sessions by subject matter experts
- Interactive teaching classrooms
- Key lectures recorded as podcasts for distribution
- Project and problem-based student learning – both individually and group work

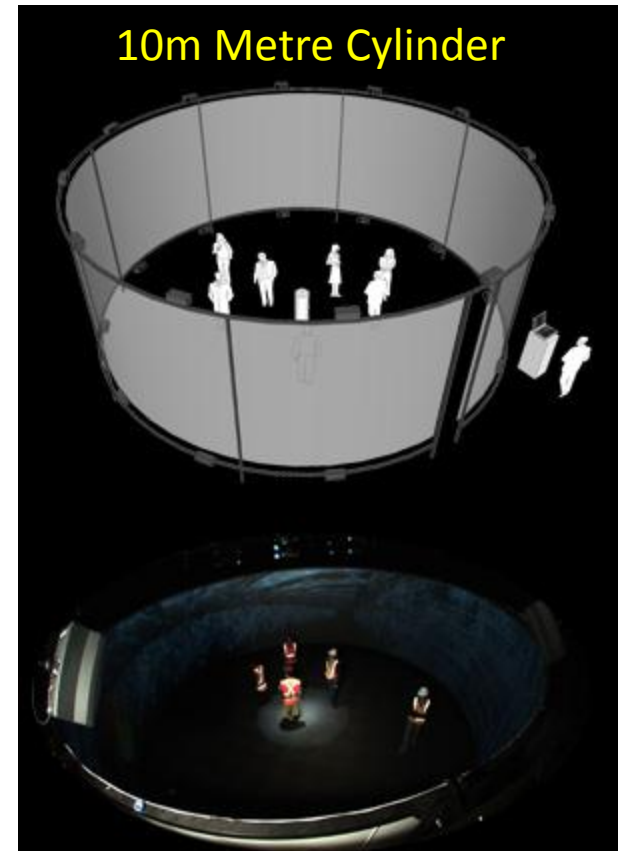
Teaching Innovations

- Fully interactive, independent web-based learning management platforms
- Distance-based learning modules
- Use of Virtual Reality (VR) teaching modules for group or individual learning

The VR Experience

- AVIE (Mono or Stereo)

Group experience the environment simultaneously



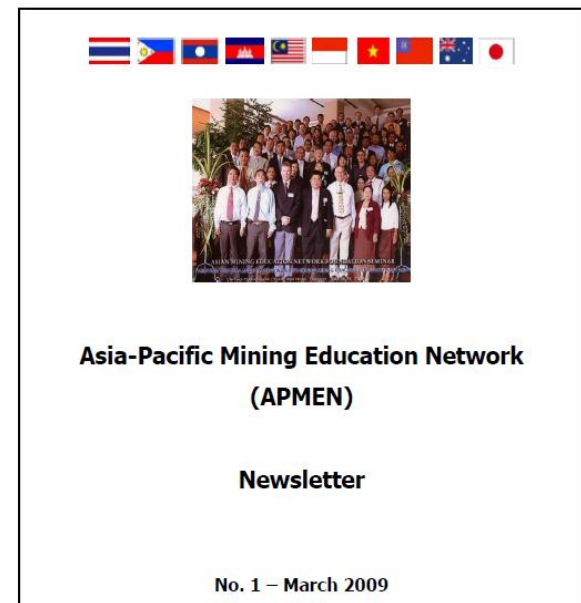
International initiatives

- Networks
- International teaching
 - eg mine vent into Canada
 - socio/enviro into SE Asia
- Student and staff exchanges
- Reviewing curricula

SE Asia initiatives

- Thailand
- Laos
- Cambodia
- Philippines
- Myanmar

- Asia-Pacific Mining Education Network
 - Formed in July 2008
 - Informal
 - Contacts by email/newsletter/visits



Thailand

- Raising awareness of sustainable development in the mining industry project
 - Workshops
 - Lectures
 - Media articles



Bangkok Post The world's window to Thailand

Petition against gold mining in Phichit

- The Department of Mining and Petroleum Engineering
 - Petroleum Engineering (Bi-lateral Relation)
 - Stanford University
 - Waseda University
 - Kyushu University
 - Georesources Engineering (Network)
 - AUN/SEED-Net
 - Asia-Pacific Mining Engineering Network
 - Society of Mining Professor (SOMP)
 - Georesources Engineering (Bi-lateral Relation)
 - Kyushu University
 - Hokkaido University
 - Waseda University
 - University of New South Wales (UNSW), Australia
 - TFH Georg Agricola, Germany
 - Ecole de Mine, France
 - Polytechnic of Namibia
 - University of Namibia (NAM)
 - University of Botswana
 - Hanoi University of Mining and Geology, Vietnam

Prof. Tangchawal of CU as visiting Professor at Polytechnic of Namibia

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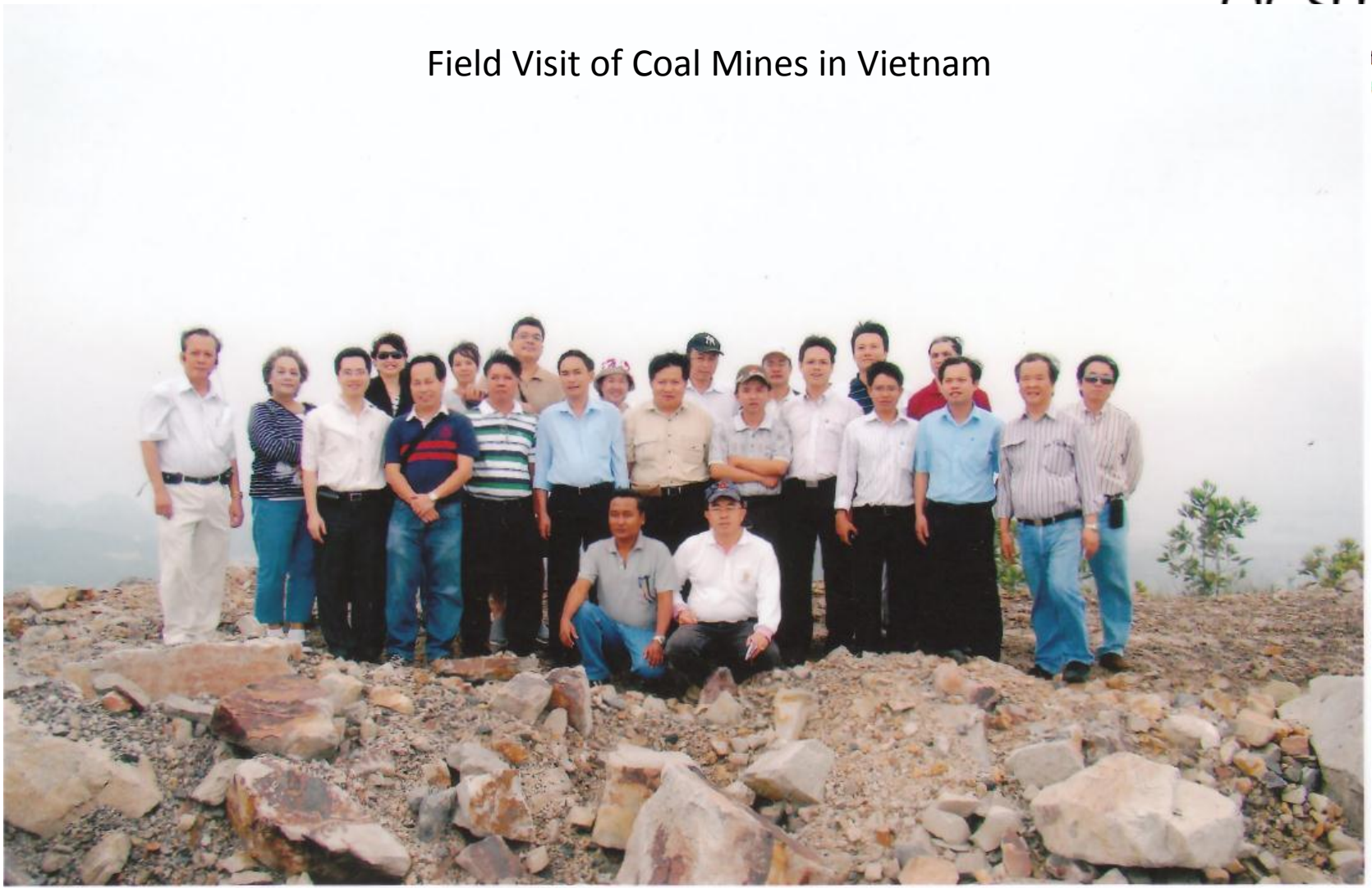


Prof. Tangchawal , third from left,
is pictured with, Kazembire Zemburuka (International Relations), Kaluluka Kanyimba
(HOD: Electrical) and Dr. Helmut Mischo (Director: Mining Engineering) at a
welcome meeting at Polytechnic of Namibia.

Second Special Training Program for four staff from NOUL at
Department of Mining and Petroleum Engineering of CU
(2nd Batch between November 2010 - February 2011)



Field Visit of Coal Mines in Vietnam



KỶ NIỆM KHAI TRƯỜNG CÔNG TY CỔ PHẦN THAN NÚI BÉO - TKV 7/5/2009

CEO of CHEVRON (Thailand) has donated 2.75 million US dollars to petroleum engineering program of Chulalongkorn University on 12th October 2010



Philippines

- Building capacity in mining faculty project
 - Huge mining potential
 - 3 mining schools
 - Industry expanding and need graduates
 - Shortage of graduates
 - Shortage of staff to teach
 - Workshops/staff exchanges/
mine visits



Laos

- Building a mining school
- Support of regional institutions
 - Eg Chulalongkorn
 - Staff attachments in Thailand
 - Young staff Masters in Indonesia
- Visits by experienced educators
 - Regional and international
 - Mine visits
- Support by WB and AusAID



Cambodia

- Human resources in minerals and petroleum industry project
 - Supported by UNDP
- Severe shortage of skills
 - Geoscience and engineering
- New geology and mining school commenced

WORKSHOP ON
PREPARATION FOR ESTABLISHMENT OF GEO-RESOURCES
AND GEOTECHNICAL ENGINEERING DEPARTMENT

Institute of Technology of Cambodia



08th December 2010
Phnom Penh, Kingdom of Cambodia



WHAT MORE CAN BE DONE?

SOMP Capacity Building Committee

- Aims:
 - To build capacity in mining engineering education in those emerging economies where mining is, or has the potential to be, a significant activity, such as Asia, Africa and South America.
 - To build global linkages and networks between mining educators in developed and developing countries

CBC - Recommendations

- 1. Combine SOMP with more local networks, eg Asia Pacific Mining Education Network and AUN SEEDNET.** The interlinking network will facilitate more collaboration among local networks and SOMP such as exchange of lectures, student exchanges, and joint research.

CBC - Recommendations

ACTION

- Develop a questionnaire to find out the existing sub-networks worldwide related to mining education, and what activities have been implemented under that sub-network program (information exchange, research and teaching collaboration and joint action among sub-network.)
- Create a calendar for the sub-network activities such as conferences, seminars, workshops, training programs etc.

CBS - Recommendations

2. Implement new mining education programs in developing regions. Particular regions of interest might be Southeast Asia, South and Central Asia, Mongolia and Africa, etc.

ACTION: 1) Developing a guideline for new membership in developing regions.

2) Supporting new programs, providing good contacts and/or in collaboration with international aid agencies.

CBS - Recommendations

3. A SOMP meeting be held in Asia and Thailand is suggested as the ideal venue.

Strategies to think about (PM)

- Setting up “Institute of ASEAN Mining Education”
- Support for capacity building from UNDP, World Bank, DAAD, 7FP, JICA, AUSAid, SIDAR, etc.
- Shortage of mining engineers in some countries but huge number from China, India, etc.
 - Concern that in the future there would be China domination to mining industry in the ASEAN.

Strategies to think about

- Big mining companies in developing countries do not (always) feel responsible for mining education – how to change the mindset?
- Establish an information exchange center for mining in the ASEAN region



Discussion & Recommendations