KDMI CODE 2011 + COMPETENT PERSON INDONESIA
(COMPARISON WITH UNFC 2009)

Arif Zardi Dahlius, CPI-IAGI
- Chairman of Masyarakat Geologi Ekonomi Indonesia
  (Indonesia Society of Economic Geologists)
- Joint Committee PERHAPI – IAGI/ MGEI for KDMI
  - Agus Sumaryanto
    - Center for Nuclear Mineral Technology
      - National Nuclear Energy Agency

UNECE Resource Classification Week 2016
Palais des Nations, Geneva, 26-29 April 2016
KCMi CODE 2011 & CPI

BACKGROUND

JOINT COMMITTEE PERHAPI-IAGI

CPI SYSTEM AND KCMi CODE

CPI + KCMi CODE AND MINING INDUSTRY

CPI VERIFICATION AND RECENT UPDATES

UNFC 2009 APPLICATION CASE STUDY ON URANIUM POTENTIAL RESOURCES
KCMI CODE – 2011

Volunteer committee of
- Indonesian Society of Economic Geologist (MGEI) – Indonesian Association of Geologist (IAGI)
- Association of Indonesian Mining Professional (PERHAPI)

Representation by invitation from :
- Indonesia Stock Exchange (IDX)
- Indonesia Financial Services Authority (OJK)
KCMJ Code – Minerals Include

- Metalliferous Mineral – e.g. gold, silver, copper, lead, zinc, iron, alluminium, tungsten, uranium, mineral sands (REE)
- Non-Metalliferous Mineral – e.g. coal, phosphate, diamond, gemstone
- Industrial and Construction Materials – e.g. sand, gravel, granite, limestone, kaolin
History of Development of KCMI Code

- **2009**: Join Committee IAGI and PERHAPI formed


- **Release of KCMI Code 2011** (20 Sep 2011)

- **Committee Implementation for CPI IAGI dan PERHAPI** (November 2011)

- **MoU with Indonesia Stock Exchange (IDX) and Indonesia Financial Services Authority (OJK)**, Dec 2014

- **Indonesia Regulation for KCMI and CPI** (*Directorate General of Mineral and Coal, Ministry of Energy and Mineral Resources*), April 2015

- **2016**: First meeting with Committee for Mineral Reserves International Reporting Standards (CRIRSCO)
WHY NEED KCMI CODE + CPI?

- People globally demands: transparency, standardization, and accountability → other countries have common reporting codes
- Indonesian mining industry growth: expansion of funding and fund sources → banks, capital market, other investors
- Demand of credible reports on exploration result, resource and reserve estimation → by capital market, private investor, Government of Indonesia
- Requests from investors, investment institutions and others in Indonesia for reports complied to other country’s code (mostly like Australian JORC) → why Indonesia did not make its own code

→ → →

Indonesian mining community needs to develop its own code for Exploration Result, Resource and Reserve reporting
There are various regulations on reporting. Yet, they have the same purpose to provide the clear and accountable information.
Geology and Prospectivity of Indonesia
Magmatic Arches and Regional Structures and Active Mines

- Excellent Tectonic and geology
- Majority holder of prospective terranes in the region (52%)
- Majority holder of metal endowment in the region (39%)
- One of largest gold-copper mines (a company-maker deposit)
- One of world’s largest producers (Au, Cu, Coal, Ni, etc)
- Skilled work forces (they have to work overseas)
- Previous proven track record (CoW)
PRIMARY MISSION

• Increase stakeholder’s confidence in good practices of “mining industry reporting system”
• Increase stakeholder’s confidence in geologists and mine engineers (“competent person”)

Give more assurance in investment climate of mineral and coal mining industry.
KCMII CODE & CPI

BACKGROUND

JOINT COMMITTEE PERHAPI-IAGI

CPI SYSTEM AND KCMII CODE

CPI + KCMII CODE AND MINING INDUSTRY

CPI VERIFICATION AND RECENT UPDATES
• Compilation of Code on Reporting on Exploration Result and Estimation of Mineral and Coal Resource and Reserves → KCMI Code 2011

• Preparing and Developing System for Competent Person Indonesia → CPI System

• Socialization of KCMI & CPI System to stakeholders

• Improving KCMI Code suited to progressive change in mining industry in Indonesia and the world.

• Keeping good relation with institutions (internal) and international relationship toward RPO (Recognized Professional Organizations) and registered in CRIRSCO (Committee for Mineral Reserves International Reporting Standards)
KCMi CODE & CPI

BACKGROUND

JOINT COMMITTEE PERHAPI-IAGI

CPI SYSTEM AND KCMi CODE

CPI + KCMi CODE AND MINING INDUSTRY

CPI VERIFICATION AND RECENT UPDATES
KCMI CODE

KCMI Code is about **Reporting** of Exploration Result, Mineral Resource and Reserve

- Concern about standardizing of **Report** – is not about how or to estimate mineral resource and coal/ore reserve

- Reporting made by company to **public** (and to government)

- Company report to public must be signed by
  - **“Competent Person Indonesia”**

Member of PERHAPI or IAGI/ MGEI
With special requirements
CHARACTERISTIC of KCMI

Introducing minimum standard for Reporting (in Indonesia) on Exploration Result, Mineral Resource and Ore Reserve

Giving classification system in tonnage and grade estimation that must be referred to be based on geological confidence and mining technical and economic consideration.

Requires Public Reports to be based on work undertaken by Competent Person Indonesia, that also describe qualification and experience of the person/persons creating the reports.

Provides extensive guidelines in criteria need to be considered in the making of the Report on Exploration Result, Mineral Resource and Ore Reserve Estimation.
Classification

Exploration Results

Increasing level of geological knowledge and confidence

MINERAL RESOURCES

- Inferred
- Indicated
- Measured

MINERAL RESERVES

- Probable
- Proved

Consideration of mining, processing, metallurgical, economic, marketing, legal, environmental, infrastructure, social, and governmental factors (the “Modifying Factors”).
KCMI CODE:
PRINCIPLES BASED STANDARD

Transparency: Data and information clearly presented and not ambiguous.

Materiality: all relevant data is presented (no hidden data).

Competency: based on work done by Competent Person Indonesia (CPI).
KCMI 2011 vs JORC 2004

- **Code Contents** ➔ almost identical *(KCMI – in Indonesian Language)*  
  similar with CRIRSCO template

- **Competent Person**
  - JORC ➔ self declared
  - KCMI ➔ self declared – plus verification by GFC and registered to IAGI/ MGEI or PERHAPI
    - ✓ Not all member of IAGI/ MGEI and PERHAPI is automatically a CPI
    - ✓ Verification by GFC periodically, every 3 months (4 times / year)
Comparison KCMI and UNECE(FC)

<table>
<thead>
<tr>
<th>KCMI 2011</th>
<th>UNFC 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-dimensional</td>
<td>3-dimensional</td>
</tr>
<tr>
<td>5 possible categories</td>
<td>41 possible categories</td>
</tr>
<tr>
<td>Technical information for financial</td>
<td>For government to rank potential</td>
</tr>
<tr>
<td>Competent Person</td>
<td>No Competent Person</td>
</tr>
</tbody>
</table>

**Exploration Results**

**MINERAL RESOURCES**

- Inferred
- Indicated
- Measured

**ORE RESERVES**

- Probable
- Proved

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the “Modifying Factors”).

![Diagram of mineral resources and ore reserves with categories and codes](image-url)
Exploration Results

MINERAL RESOURCES

- Inferred
- Indicated
- Measured

MINERAL RESERVES

- Probable
- Proved

Increasing level of geological knowledge and confidence

Application of mining, processing, metallurgical, economic, marketing, legal, environmental, infrastructure, social, and governmental factors (the “Modifying Factors”).

Project feasibility

Socio-economic viability

Non-sales Production

Sales Production

Geological knowledge
Exploration Results

MINERAL RESOURCES

- Inferred
- Indicated
- Measured

MINERAL RESERVES

- Probable
- Proved

Increasing level of geological knowledge and confidence

Application of mining, processing, metallurgical, economic, marketing, legal, environmental, infrastructure, social, and governmental factors (the "Modifying Factors").
Increasing level of geological knowledge and confidence

Application of mining, processing, metallurgical, economic, marketing, legal, environmental, infrastructure, social, and governmental factors (the "Modifying Factors").
COMPETENT PERSON INDONESIA (CPI):

- Member of PERHAPI and/or IAGI-MGEI
- Five years of relevant experience
- Comply with PERHAPI and IAGI-MGEI Code of Ethics.
- Passing verification by Committee of KCMI Code Implementation and CPI jointly made by PERHAPI and IAGI-MGEI
- PERHAPI and IAGI-MGEI have the authority in members disciplinary including give discipline warning and sanction to their members (CPI)
BACKGROUND

JOINT COMMITTEE PERHAPI-IAGI

CPI SYSTEM AND KCMI CODE

CPI + KCMI CODE AND MINING INDUSTRY

CPI VERIFICATION AND RECENT UPDATES
RELATION WITH OTHER REGULATIONS

- Regulation in Capital Market-- (IDX; OJK)
  
  ✓ Regulation on Stock Listing for Mining Issuer –*effectively Nov 2014*
  ✓ MoU between IDX and IAGI-PERHAPI about “competent” expert *dated 11 December 2014*

- Government Regulation
  
COMPETENT PERSON and KCMI

BACKGROUND

JOINT COMMITTEE PERHAPI-IAGI

CPI SYSTEM AND KCMI CODE

CPI + KCMI CODE AND MINING INDUSTRY

CPI VERIFICATION AND RECENT UPDATES
Implementation
System
Organizers

1. Advisory Council
2. Management Board (Chairman, External Relation, Implementation)
3. First Member / Grand Father Clause
4. Ethics and Discipline Council

KEPUTUSAN PENGURUS
MASYARAKAT GEOLOGI EKONOMI INDONESIA
(MGEI)
No. SK/MGEI/04/2013
TENTANG KEPENGURUSAN KOMITE IMPLEMENTASI
SISTEM "COMPETENT PERSON" IAGI
DAN
SISTEM PELAPORAN HASIL EKSPLORASI, SUMBERDAYA
DAN CADANGAN MINERAL DAN BATUBARA INDONESIA TAHUN 2013-2015

Menimbang:
1. Perkembangan dunia pertambangan saat ini menuntut adanya Transparansi, Standarisasi
   dan Akuntabilitas.
2. Tuntutan akan Laporan Hasil Eksporasi, Sumberdaya dan Cadangan Mineral dan Batubara
   harus memiliki kepastian dan standard yang tinggi.
3. Beberapa negara lain yang memiliki industri pertambangan sebagai bagian dari kekuatan
   ekonominya telah memiliki acuan dalam pembuatan laporan untuk para pemangku
   kepentingan berkaitan dengan hasil eksporasi, pernyataan sumberdaya dan cadangan
   mineral dan batubara.
4. Indonesia perlu mengembangkan kode pelaporan hasil eksporasi, sumberdaya dan
   cadangan mineral dan batubara sendiri yang akan dipakai oleh semua pihak yang
   berkaitan dengan pengusahaan mineral dan batubara, dimana IAGI (Ikatan Ahli
   Geologi Indonesia) dan Perhimpunan Ahli Pertambangan Indonesia telah
   menyusun Kode KCMI (Komite Cadangan Mineral Indonesia) sebagai standard pelaporan
   hasil eksporasi, sumberdaya dan cadangan mineral dan batubara Indonesia.
5. Diperlukan sistem untuk melaksanakan, mengembangkan, menerapkan dan menegakkan
   pemakaian Kode KCMI sebagai standard yang ditetapkan.

Mengingat:
1. Undang-Undang No. 4 Tahun 2009 tentang Pertambangan Mineral dan Batubara.
2. Pedoman Organisasi MGEI dan Anggaran Dasar/ Anggaran Rumah Tangga IAGI
3. Surat Keputusan Bersama (SKB) IAGI dan Perhimpunan Ahli Pertambangan Indonesia
   tentang Pembentukan Komite Bersama Pengembangan Sistem "Competent Person" dan
   Pelaporan Hasil Eksporasi, Sumberdaya dan Cadangan Mineral Indonesia
4. Surat Keputusan Pengurus Pusat (PP) IAGI No.Kpts/20/V/In-2011 tentang Penunjukan dan
   Penugasan MGEI pada Implementasi Sistem "Competent Person" dan Kode Pelaporan
   Hasil Eksporasi, Sumberdaya dan Cadangan Mineral Indonesia
5. Surat Keputusan Bersama (SKB) IAGI (Kpts/002/XII/ext-2012) dan PERHAPI
   (SK.005/SK/K/PH/II/2012) tentang Perpanjangan Komite Bersama Cadangan Mineral
   Indonesia (KCMI)
CPI CLASSIFICATION related with
MINING FEASIBILITY DEFINITION PROCESS

Exploration
- Legal Aspect Assessment
- Data Collection and Quality Control
  1. Exploration Technical Method
  2. Sampling Method
  3. Drilling
  4. Laboratory Analysis
  5. Interpretation and Geological Model

REPORT ON EXPLORATION RESULT

Resource
- Legal Aspect Assessment
- Data Validation and Resource Estimation
  1. Geological Data and Information Validation
  2. Geological Modeling
  3. Resource Estimation

REPORT ON RESOURCE ESTIMATION

Reserve
- Legal Aspect Assessment
- Data Validation and Assessment
  1. Marketing Aspect
  2. Mining Aspect
  3. Processing and Transportation Aspect
  4. Environment and Social Aspect
  5. Economy Aspect
  6. Investment Return Criterion
  7. Reserve Estimation

REPORT ON RESERVE ESTIMATION
COMPETENT PERSON INDONESIA

“Certificate” of CPI is given by Dirjend Minerba KESDM RI
At Annual Convention of MGEI/ IAGI
Bali, 1 Desember 2013
Energy Mix Projection

Note: Nuclear is categorized into the new energy.
### CASE STUDY ON URANIUM POTENTIAL RESOURCES

<table>
<thead>
<tr>
<th>Reserves and resources mineral classification (KCMI)</th>
<th>UNFC - 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mineral Reserves</td>
<td></td>
</tr>
<tr>
<td>- Proved Mineral reserves</td>
<td>111</td>
</tr>
<tr>
<td>- Probable Mineral reserves</td>
<td>121,122</td>
</tr>
<tr>
<td>2. Mineral Resources</td>
<td></td>
</tr>
<tr>
<td>- Feasibility mineral resources</td>
<td>211</td>
</tr>
<tr>
<td>- Pre-Feasibility mineral resources</td>
<td>221,222</td>
</tr>
<tr>
<td>- Measured Mineral resources</td>
<td>331</td>
</tr>
<tr>
<td>- Indicated Mineral Resources</td>
<td>332</td>
</tr>
<tr>
<td>- Inferred Mineral Resources</td>
<td>333</td>
</tr>
<tr>
<td>- Reconnaissance Mineral Resources</td>
<td>334</td>
</tr>
</tbody>
</table>

Lembah Hitam, Lemajung dan Semut sector at West Kalimantan, have UNFC = 331, indicating the status of measured resource classification and has international standard (Dynamic System).
RADIOACTIVE MINERAL OCCURENCES MAP IN INDONESIA

EXPLANATION:

- Green: Area with Indication of Uranium Occurrences
- Brown: Area with Indication of Thorium Occurrences
- Red: Area with Potential of Uranium Resources

1. Aceh Tenggara
2. Tapanuli
3. Sibolga
4. Harau
5. Muara Bungo
6. Lampung Tengah
7. Jalar Timah (Bangka Belitung)
8. Sanggau
9. Ketapang
10. Kalan
11. Darab dan Mentawa
12. Bulit
13. Kawat (Mahakam Hulu)
14. Bangkir
15. Pasangkayu
16. Masamba
17. Baturu
18. Bantimara
19. Maros Gowa
20. Mamuju
21. P. Banggai, Sula
22. Peg. Arfak
23. Ransiki
24. Biak
25. Peg. Tengah
26. Nabire
HIGH QUALITY REPORTING
(by CPI complied to KCMI Code)

KCMI Code and CPI System fully implemented in Indonesia and internationally recognized

Advantage for mining industry:

- Provide and present validated data of exploration result, mineral resource and reserve
- A lot easier to make report by multinational company which needed high quality reports
- Provide more assurance to project statute, and decrease efforts and unnecessary cost of funding from several sources of fund.
- Encourage non-mining source of fund to invest in mining industry.
- Easy to compare between investment in different type of commodities (minerals and coal).
- KCMI code fully support for Indonesia energy mix development and sustainable energy supply
Detail Information about KCMI Code& CPI:

http://www.mgei-iagi.org

or email to

CP.IAGI@gmail.com
kkicp.perhapi@gmail.com
Thank You

Grasberg Underground