CURRENT STATUS OF MINING SCHOOLS IN INDONESIA

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Undergraduate Study Program of Mining Engineering
Faculty of Mining & Petroleum Engineering
Institut Teknologi Bandung
### Undergraduate Study Program of Mining Engineering | ITB

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Number of Univ.</th>
<th>Number of Students</th>
</tr>
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<td>2</td>
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<tr>
<td>D3</td>
<td>17</td>
<td>20</td>
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<tr>
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<td>51</td>
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<tr>
<td>S2</td>
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<tr>
<td>S3</td>
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<tr>
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</table>

Source: [http://forlap.dikti.go.id/](http://forlap.dikti.go.id/)

### Accreditation by BAN PT

<table>
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<tr>
<th>Qualification</th>
<th>Number of Univ.2019</th>
<th>Accredited by BAN PT</th>
<th>Not accredited</th>
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<tr>
<td></td>
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<td>Total</td>
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<td>D3</td>
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<tr>
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<tr>
<td>S2</td>
<td>3</td>
<td>3</td>
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<tr>
<td>S3</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td></td>
<td><strong>75</strong></td>
<td><strong>50</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Indonesian Mining Areas Map

PWC (2018)
Coal & selected Mineral Commodities

Coal Production

Source: Indonesian Coal Mining Association (APBI)

Nickel Production

Source: Vale (Estimated based on Vale Production Report), Antam (Based on Annual Report)

Gold Production

Source: U.S. Geological Survey, Mineral Commodity Summaries (USGS)
*Estimated

Copper Production

Source: Business Monitor International Ltd.
Depth of cover versus discovery year:
Gold and Base Metal discoveries in the World: 1900-2016

Industry is progressively looking under deeper cover over time

Such deposits are harder to find
... but this is a “slow-burn” story and doesn’t explain the rapid decline in recent performance

Underground mines

Note: Size of the bubble refers to Moderate, Major and Giant discoveries. Analysis excludes Nickel laterites.

Source: MinEx Consulting © March 2017
Number of Graduates

2019 - 14,231 Student
4 years study program
\sim 3,500 graduates in 2021

Total HR needs for mineral and coal
\sim 350,000
Number of Faculty Staf

Student-to-Staff Ratio
Mining Schools in Indonesia

<table>
<thead>
<tr>
<th>Year</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
<th>2018/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining Student</td>
<td>15,117</td>
<td>17,735</td>
<td>15,100</td>
<td>16,977</td>
</tr>
<tr>
<td>Faculty Staff</td>
<td>479</td>
<td>564</td>
<td>544</td>
<td>480</td>
</tr>
<tr>
<td>Student-to-Staf Ratio</td>
<td>31.56</td>
<td>31.45</td>
<td>27.76</td>
<td>35.37</td>
</tr>
</tbody>
</table>

Times Higher Education, 2018
Five aspects in improvement of mining engineering education
McDivitt (2002)

- The role of industry,
- The role of mining associations,
- The Interface with the Schools,
- Actions to be taken within universities and between universities,
- Learning from experience in other fields.

What have been done so far in Indonesia especially ITB?
The Role of Industry

- Industry is the key
- Industry Advisory Teams
  ITB: Total 12 members where 11 members are from mining industries.
- Industry Scholarships
  ITB: $10 million for 11,000 students from total 15,000 students.
- Endowed Faculty Posts, ITB2020 plan to Rp.1 T or $70 million.

Voluntary support of education (2015)

“Alumni giving at Harvard University topped more than $650 million during the 2015 fiscal year. Former students of Princeton University donating nearly $400 million in that same year.”
The Role of Industry

- Visiting Lecturer
  
  *ITB: once per two weeks industry experts teach courses as guest lecturer.*

- Student Internship
  
  *ITB: Students spend 1 to 2-month periods at industry, where they work at a regular job and are not paid.*
The Role of Mining Associations

- The Mining Associations should serve as a valuable link between the components of the industry, bringing together in their memberships representatives of government, industry, universities, and to an increasing extent the other “communities of interest.”

- Remains challenge for Indonesia,
  - Association of Indonesian Mining Professionals: *annual meeting of mining engineering study program, PERHAPI goes to campus.*
  - Indonesian Coal Mining Association: *hybrid teaching for secondary mining school, giving Scholarship.*
Actions Within and Between Universities

- ITB: Mining engineering students may also take a minor in Metallurgy, Geophysics or Petroleum.
- Hybrid teaching,
  - ITB & UMI (all subjects)
  - ITB & Syiah Kuala University (few subjects)
- Sharing laboratory,
  - Trisakti University (Rock mechanics, Mine ventilation, Mineral processing)
  - ITSB (Rock mechanics)
  - UIN (Geostatistic, Hydrogeology, Rock mechanics, Mine ventilation, Mineral processing, Mineralogy & Crystallography, Geotechnics)
  - AGP (Mineralogy & Crystallography)
- Putting courses online (non conventional energy resources).
Summary

- The mining sector remains promising for the next five years. Production would not significantly increase.
- Huge number of mining graduates.
- High student-to-staff ratio.
- Partnership with industry is critical.