

A silver metal spiral binding is visible on the left side of the page, looping through a series of holes in the paper.

Mining Education in Latin America Initiatives and Opportunities

Prof. Mario Cedron

Head of the Mining Area

Department of Engineering

Pontificia Universidad Catolica del
Peru

Mining Investment in LA

| Year | % of worldwide mining investment |
|--------------|----------------------------------|
| 1990 | 12% |
| 1995 | 28% |
| 2000 | 33% |
| 2005 (expt.) | 30% |

Region's Mining Output and Main Products

- Brazil 4% of world's production
- Chile 3%
- Peru 2%
- Mexico 2%
- Argentina, Bolivia, Colombia, Venezuela and the rest of the LA countries represent 4% making a total of 15%, about the same as USA. Main products are Au, Cu, Ag, Zn, Sn, Al, C, gems, dimension stone and aggregates.

Social and Economical Impact of the Mining Industry in LA

- 500000 direct employees
- 1.5 million indirect
- 10 million people depend economically of the mining industry.
- In many countries (Chile, Bolivia, Peru), mining represents more than 50% of exports
- The industry requires over 400 new mining engineers per year (USA 300)

Mining Education in LA

- 45 Mining Faculties (USA 13)
- 9000 undergraduate students (USA 500)
- Mining programs take between 4 to 6 years
- Desertion is high in some faculties
- 800 graduates per year in average
- Over 80% of the mining faculties belong to the “Asociacion Iberoamericana de Enseñanza Superior de la Minería” (AIESMIN) whose annual meeting will take place between September 8th and 13th at Arequipa – Peru prior to the XXVII Peruvian Mining Convention (biggest mining event in LA). It also includes mining schools from Portugal and Spain.

Main problems - Weaknesses

- All but 2 universities (Catolica of Peru and of Chile) are public with all the problems that means in LA
- Lack of funds, too large student population
- Poorly paid lecturers, lack of labs. and research
- Weak support from industry although improving
- Lack of accreditation in some cases

Strenghts

- Large number of young people willing to follow a career in mining.
- A traditional and expanding mining industry with state of the art technology.
- Presence of multinational mining companies from all over the world.
- Consolidated mining organizations (Institutes of Mining Engineers, Mining Societies, SME Sections, etc.
- English compulsory in many mining programs.
- Various good undergraduate mining programs

Opportunities

- As mining moves from north to south there is an opportunity of collaboration between organizations in both hemispheres, specially with regard to mining education and research.
- The north can provide advanced knowledge, experience and state of the art technology, the south can provide top notch graduates willing to pursue postgraduate studies and do reseach
- International mining companies working in the region and others can give support.

Initiatives

- We must promote closer ties between top class mining schools in developed countries and those in developing countries with good potential for collaboration (minimum infrastructure, funding, quality of studies) Multilateral agreements is a way.
- Mining Societies should get more involved in mining education but with a global vision. The initiative of SME of going towards the creation of an American Mining Societies Council is a way.

Initiatives (2)

- The role of industry is crucial, mining schools from both hemispheres should work together towards convincing international mining companies working both north and south of the need of supporting mining education in a global way, through common projects of interest to them.

Initiatives (3)

- Virtual learning is developing at a high speed, through the Internet it is possible to share academic resources in an economical manner, we should make more use of it. Language shouldn't be a problem.
- Mining publications should seek a wider auditorium, mining schools can help.
- Being mining an international industry, we should seek interaction between students of both hemispheres, participation in events is a way.



Muchas gracias

Prof. Mario Cedron

www.pucp.edu.pe