Mining Education and Training for Sustainable Indigenous Community Development

Mike Katz
Manager KCM International
School of Mining Engineering, University of New South Wales

Abstract

Indigenous people are under-represented in the mining industry. Participation in the mining industry at all levels can contribute to Indigenous development and wealth-creation, given the often negative impact it causes. Many large and small scale mines are located in the vicinity of poor Indigenous communities. These mines often provide employment and a livelihood however with only a handful of Indigenous business men, professionals and leaders.

Stakeholders in many countries claim to be aware of this problem and in some cases there are a number of programs that promote employment, education and training, business opportunities, cultural awareness, capacity building and economic empowerment where Indigenous communities and mining companies learn from each other for mutual benefit. Prospecting and small scale mining training, community and primary school awareness and outreach programs would benefit sustainable Indigenous community development

The 2005 Indigenous Australian Engineering Summer School survey indicated that a mining career is of interest and this sector had an overall positive image. Education and training institutions as partners, should offer mining programs as a pathway to Indigenous leadership roles in the mining industry and in the wider community.

Introduction

There is no question that Indigenous people worldwide are badly under-represented in the mining profession. The number of trained mining engineers and geoscientists required to make up the shortfall is numbered in the hundreds. This is unfortunate, because science and engineering are the only original wealth-creating professions. Under-representation of any group in society means that the attitudes and opinions of that group are presented only by hearsay in important forums where the future is being decided. Remote communities and regions are areas most in need of sympathetic infrastructure development - a process that can only be undertaken ultimately with the contribution of professionals, educated in our institutions. Wealth creation through mining and its environmental and social impact will be undertaken in these areas with or without participation of those Indigenous people living there**.** Communities without mining awareness and knowledge remain dependent on outside assistance and ultimately financial exploitation. Experienced Indigenous mining professionals and experts can be among the most valuable resource such communities can have.

In Australia a recent report, Indigenous People in Mining (ABARE eR03.19 indigenous people.pdf) showed that 40% of all mine sites were located in the vicinity of Indigenous communities with only about 5% Indigenous employees. Of these 12% attended or completed primary school, 51% completed 1 – 4 years of secondary school, 7% completed secondary school, 25% completed trade technical vocational training and only 3% completed university or other tertiary level courses. As a result most Indigenous employees (about 90%) were production, transport, trades and labour workers, 5% clerical, sales and service workers, 3% managers, administrators and associate professionals and only 1% in a professional capacity. The total number of Indigenous employment is calculated at about 2,500 people so that would indicate that there are only about 25 Indigenous professionals with no specific information if they are mining professionals. Anecdotal evidence suggests that there are only a handful of Indigenous geologists and mining engineers.

Australian Experience

University of New South Wales – Faculty of Engineering

The Indigenous Australian Engineering Summer School (IAESS)
(http://www.eng.unsw.edu.au/iaess/2005/index.htm) is an unique event held annually for 20 Aboriginal and Torres Strait Islander (ATSI) students, male and female, entering years 10 to 12. It is a five-day live in summer school featuring a combination of activities that will give a taste of engineering as a university course and career. Applicants are selected on the basis of their interest in useful engineering subjects and personal initiative and outlook. Relevant observations in the 2005 function are as follows:
- Brochures were sent out to all secondary schools in Australia that have sizeable Indigenous student numbers including the remote Northern Territories
- In 2005 there were about 80 applications Australia – wide for the 20 or so places
- Over the years about 10% of these students actually enrol in engineering courses
- There is only a handful of practicing Indigenous engineers
- Engineering studies are of low priority as Indigenous community development is seen to be more important in law and medicine
- A survey during the School of Mining Engineering session with the IAESS students indicated that geology/mining engineering is of interest and the mineral sector generally had a positive image especially those that had the awareness and experience.

The Faculty also offers an ATSI Scholarship
(http://www.eng.unsw.edu.au/prospect/ug/ugschol.htm#atsi) to encourage Indigenous students to undertake undergraduate study.

The School of Mining Engineering, Sustainable Mining Practices Short Course
(http://www.mining.unsw.edu.au/WhatsNew/Course_sustainablepract_0311.htm) was held in Darwin, NT in November 3-5, 2003 and attracted people from Mining and Exploration Companies, Government Departments and Statutory Bodies and Indigenous Land Councils.
The course aimed to:
- Provide a basic understanding of mining methodologies used in Australia;
- Provide the context of mining in a sustainable world;
- Present the main environmental issues and the management of these issues; and explore the social and community impacts of mining and the sustainable management of these impacts.
The course leaders had extensive experience in working to optimise the community benefits of mining, particularly to Indigenous communities in Australia, Fiji, PNG, Indonesia and Africa.

Australian Mineral Education for Indigenous People Initiatives

The Minerals Council of Australia (MCA) had prepared an 'Our Land Our Future'
(http://www.minerals.org.au/education/NEP/educational_resources/our_land_our_future)
interactive education kit for Indigenous students and communities designed for use by teachers of 8-14 year old students in remote areas to assist teachers and students to understand the processes and issues involved in exploration, mining and processing minerals in Australia.

A recent MCA media release (March 24, 2005) notes the establishment of an Education and Training Standing Committee which includes Indigenous employment and training where the MCA is working with the Department of Employment and Workplace Relations to strengthen and expand Indigenous employment and sustainable development outcomes for communities in which the industry operates.

The Australian Student Mineral Ventures (http://www.asmv.org/) are an initiative of The Australian Institute of Mining and Metallurgy Education Endowment Fund. The Ventures are 10-12-day summer schools that are aimed at attracting more of Australia's brightest students to enrol in minerals industry courses at university. At present there are no special provisions for placing Indigenous students.

Both Government and Industry in Australia are aware of these problems and there are a number of programs that promote employment, education and training, business opportunities, cultural awareness, capacity building and economic empowerment. The Department of Industry, Tourism and Resources has an Indigenous Partnership Program (http://www.industry.gov.au/content/sitemap.cfm?objectid=48A4D714-20E0-68D8-ED7E7DC53C6D96AD) where Indigenous communities and mining and exploration companies learn from each other for mutual benefit. Rio Tinto one of the leaders in this area has established the Rio Tinto Aboriginal Foundation (www.rtaf.riotinto.com) with initiatives that include education as a supporter of IAESS and offering National Indigenous Cadetships to a number of these students

International Experience.

Indigenous Mineral Education Global Initiatives

The Minerals Sector Education for Indigenous People (http://www.wmmf.org/indigpeople/index.shtml) plenary session, held at the World Mining Ministries Forum (WMMF) 2004 in Toronto, Canada, explored the global experience relating to enrolment, education and graduation of Indigenous students and also addressed the need for improved capacity development at the community level. The session was convened by the W.S. Fyfe program in Natural Resources and Sustainable Development, University of Western Ontario and co hosted by the School of Mining Engineering, UNSW with the sponsorship of Cameco, BHPBilliton, Fugro, The Province of Ontario, the City of Sudbury and the World Bank.

Research Plan

As an outcome of the WMMF Mineral Sector Education for Indigenous People a research plan has been initiated on the opportunities and obstacles that exist for schools and Universities to participate in both informal and formal mineral education for Indigenous students and to evaluate the solutions. This research is planned to be in cooperation and collaboration with interested partners.

Selected case studies of Indigenous communities involved in small scale mining or employed in mines and their mining education and training needs will be surveyed. Examples of informal, on site, community outreach and other activities that serve to raise the awareness and knowledge of Indigenous people to the benefits of mining and sustainable development will be examined. An assessment of these studies would be made to gauge the interest in more formal studies given the present obstacles in regard to mining's negative image, the community's lack of participation on the leadership and professional level and their overall poor educational performance where science and engineering, especially in the mineral sector, are not necessarily considered as priority areas for Indigenous community development.

Secondary School education programs will be reviewed where Indigenous students and their teachers are made aware of mining in the syllabus by using appropriate resources and material. Government, Industry, Organisation and University supported mineral sector scholarships that would be relevant to Indigenous students will be reviewed and collated for a database that would be planned to be made available online.

An assessment of how the Universities can strengthen partnership opportunities with State, Provincial and Central Governments, NGOs, Industry, Organisations and Communities that are all stakeholders/ partners in the Indigenous mineral sector educational process will be undertaken. Plans will be formulated for strengthening these bonds by developing appropriate and type sustainable mining education and training programs to promote Indigenous mining professional decision makers, leaders and role models. The research also aims to find ways, means and options to increase the enrolment, retention and successful completion of Indigenous students in University mineral education programs and their professional career participation in the mining industry.

In summary, this Research Program will share learning experiences for the aim of strengthening and developing Indigenous community's awareness of the prospective positive benefits of sustainable mining for their development, Indigenous student participation in a range of education and training activities leading to careers in mining and Indigenous University students equal study and work opportunities and graduate employment, as well as promoting University Geology and Mining Engineering Departments, in the role as partners, to develop appropriate mining education programs as a pathway to Indigenous leadership roles in the mining industry and in the wider community.

Philippine Indigenous Mining Education and Training Project Proposal

The traditional gold mining experience of the Indigenous Kankana-Ey community in the Philippines outlined by Evelyn J. Caballero recently at the 2004 CASM General Meeting and Learning Event
(www.casmsite.org/Documents/21-Colombo-Caballero.pdf) can serve as an example of Indigenous people involved historically in small scale mining where both the men and women work side by side. Their relationship with large mining companies (Benguet Corporation, Lepanto Consolidated) and the Government stakeholders and their cultural, environmental and health concerns and issues have been documented. What of their future sustainable development in regard to full participation, education and training needs and the development of professional and business skills as a pathway to leadership and role models in the mining sector ?

The draft proposal under consideration would undertake the following survey of mining education and training activities with the cooperation and collaboration of local appropriate Filipino institutions, for example the Department of Mining, University of the Philippines, Lepanto Special Educational Assistance Program for Indigenous People
(www.psem.ph/articles/lepanto_kanakanaey.htm)
and the St Louis University, Baguio City – Pathways to Higher Education Program
(http://www.slu.edu.ph/offices/pathways.htm), under the assumption that like most small scale mining communities they would require assistance in making more resources available and in providing training and technical assistance.

1. The Education and Training Needs
2. The Educational Level both Informal and Formal
3. The Availability of Schools, Training and Vocational Centres
4. Opportunities for Mining Company Employment and Training
5. Mining Company and Government Sponsorship
6. Professional and Business Education and Training
7. Role of Indigenous People in Mining Companies and Government Agencies
8. Role of Universities in Indigenous Education Programs
9. Leadership and Role Models