Brazilian policy towards artizanal and small mining clusters

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Introduction

In Brazil, as in all Latin America and the Caribbean, artizanal and small mining historically were mainly developed towards high value minerals, gems and metals (CETEM/MCT, 2000). More recently, other minerals such as some industrial minerals and others needed by civil construction were considered important contribution held significantly by ASM operations. For instance, among the 2,367 total mines that hold legal tenures (DNPM, 2004), 1,706 (72.8 %) are small-scale operations. Besides that, it is estimated a similar amount of informal operations, mostly ASM.

Nowadays the overall contribution of ASM to Brazilian mineral economy is considered very important by policy makers mainly due to the positive effect on income distribution among poor communities in hundreds of places all over Brazil. If the legal mines occupy around 135 thousand workers, the number of informal artizanal miners could reach another 130 thousand people.

On the other hand, the general social evaluation about mining, specially the artizanal, are the worst possible in the recent years due to related environmental impacts and on the work conditions of the garimpeiros (artizanal workers). A very complex legal framework make the legal licensing almost impossible to be followed by individual miners.

Although most of these conditions still prevail, a major shift is happening and the first results can be felt in many places right now. In the author’s opinion the background conditions that pushed federal and some regional governments to a more adequate relationship with ASM were:

- A strong commitment of the present President with poverty alleviation and job generation;
- Natural and mineral resources weight considerably for a positive external trade balance
- Micro and small enterprises are playing an increasing role in the country economy
- New ASM sectors, such as dimension and ornamental stones, are raising at high rates and spread throughout the country
As a response to the new comprehension it was set in March 2004 a new industrial policy that contains, among other resolutions, definitions and tools to render possible strong support to SMEs, specially those located on production clusters. The definition for an industrial or production cluster was slightly changed, compared to the traditional economic thinking, to render it more suitable to Brazilian SMEs situation.

For the mineral sector, the possibility to promote ASM was quite positive since new support funds were created and with the help of governmental and/or NGOs many mining communities might change their ways of organization and production reaching better technical, trade and environmental standards. Another important change was the name of such mineral sites, before almost all named garimpos and understood as “out of law” and conflictive sites, to a new definition of mineral based local cluster.

**Mineral clusters (APLs)**

Inside the new industrial policy, know as PITCE, there are the objective and policy tools to enhance SME competitive conditions, especially for those located on predefined clusters sites. It was created a governmental Working Group which task was to find out the sites that could be considered as clusters. Four hundred sites were found where at least one of the working group agencies was developing some previous supporting activity.

There are clusters in almost all industrial sectors and they can be classified by many features such as size (# of enterprises) or level of technological development. The working group, helped by an academic team, set a proper methodology to classify those clusters in order to devote specific tools and support according to their situations and needs.

Not only the federal government and its SME Support Agency, the SEBRAE, are undergoing special programmes, but many provincial governments have now their own policies and activities for APL development.

Even before the new policy, the Brazilian Ministry for Mines and Energy had a specific study on mineral clusters having previously selected 200 small scale mining sites. Twenty-nine were considered as having good or very good conditions to improve their situations and raise their local communities’ social and economical benefits.

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1 APL or arranjos produtivos locais are the economic clusters in the brazilian policy definition
2 External trade, technology and industrial policy - PITCE
3 The academic team was created at the Fed. Univ. of Rio de Janeiro, know as REDESIST
Figure 1 shows the location of some clusters included in the selected twenty-nine.

**Technological support to mineral clusters**

Previous diagnosis studies on mineral clusters or APL in Brazil show the lack of access to loans, to adequate and low cost technologies, low products prices due to poor quality features and less but not the least, bad environmental and health problems. That means, that there is lot of work to do. The ministry for Science and Technology, together with the Ministry of Mines and Energy, then created special funding to support extension projects to support most of the selected APLs trying to gather contributions of high level research and academic institutions and their professionals.

**Figure 1. Some mineral clusters spread through Brazil territory**
As a result, CETEM was asked to lead three mineral APLs and to hold some kind of technical support on other two, which are respectively: the APLS of natural stone of Santo Antonio de Padua (Rio de Janeiro Province), the limestone in Cariri region (Ceará Province) and the Opal cluster at Piauí Province, all three located on poor or very poor regions. The other two were CETEM is offering just limited aid are the Soap stone cluster at Minas Gerais and the Ornamental limestone cluster of Ourolandia, Bahia Province. After 8 years since CETEM, started its first APLs project, the evaluation of obtained results can be considered quite good.

At the Padua natural stone APL, together with other well skilled institutions' professionals, the environmental and mining licenses are being obtained by a step-by-step process of technical improvements with small loans aid to stone producers. An important technical result was the wide spread use of a simple solid liquid separation process that renders possible the recycling of process water for stone saw cutting machines. Another technical feature is the use of fine solids tailings by a mortar factory that is now being built nearby the stone production sites under patent licensing form CETEM. The simplicity of the process and its spread use by more than 45 stone saw units render to the technical team an important national prize, the 2005 Finep Innovation Prize, for the second place among more than 200 other projects competitors. Figure 3 shows the photo of the simple solid/liquid utility.

In the Cariri limestone APL, a complex situation was established since very poor agricultural workers, to complement their incomes, also explores the limestone quarries. They produce tiles from the sedimentary rock for building coverings and/or make lime from the crystalline rock for many purposes in very rudimentary ways. But there is an important constraint since the site is one of the more important Cretaceous Era fossils place in the world, what makes artizanal mining unacceptable by most paleontologists. Fossils are also a federal property and that are many people smuggling samples. Stakeholders interested in solving part of those problems worked together and recently set an easy formal licensing for artizanal miners to keep their areas assuming the legal responsibilities. They are but also having support to improve quarries exploitation and will receive new machines to make “cut to size” tiles and other products that will operate in a cooperative for use by most of the miners.

The Opal APL has some different features compared to the previous ones. During many years one mining company ran the operation of the Mina do Boi Morto, a huge mining project. Tailings from rock processing were left beside the old mine containing poor amounts of opal, mostly in very small size. The

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4The net of institutions in Padua is formed by the Dep for Mineral Resources of Rio State, the Dep of Geology of the UFRJ, the National Inst. Of Technology, along with the help of SEBRAE RJ and funding form the S&T Federal Mineral Fund and Rio State S&T agency.
creativity of some local jewelers creates new design and other ways to use those small opal pieces, what generated a new local ASM operation. CETEM and other regional partners are working together to help artizanal miners to work in safer conditions and to obtain higher opal recovery using suitable mineral processing equipment.

Conclusions

For CETEM and its technical team the mining clusters support projects are being a very exciting opportunity to transfer adequate knowledge to mining communities that for many years were excluded from all types of government technological programs. This positive change is proving that with suitable help most of artizanal miners may develop their own operations in a much more sustainable way.

Some references

1. For clusters economic: [http://www.redesist.ie.ufrj.br](http://www.redesist.ie.ufrj.br).
Clusters Images

Low cost technology to separate fine solids and water recycling to plant

Fine solids from process water

Industrial mortar plant
# Program of Events

Communities and Small-scale Mining (CASM)  
6th Annual CASM Conference  
November 11th-15th, 2006 in Antsirabe, Madagascar  

**ASM: From THREAT to OPPORTUNITY**

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<td>• ILO Program to eliminate hazardous child labour in mining.</td>
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Day ONE of Technical Program

Saturday, November 11th 2006

All Day Event  Poster Exhibition  Hotel des Thermes
All Day Event  Tech Show Exhibition  Hotel des Thermes
All Day Event  Minerals Market  Train Station

8:00 - 17:00  Conference Registration  Hotel des Thermes
8:00 - 8:30  Breakfast Meeting of Conference Chair People and Facilitators  Hotel des Thermes

8:45 - 10:30  Session One: Opening Ceremony

Chairman: Jon Hobbs, DFID, UK and Chairman, CASM

8:45  Opening Ceremony
Welcome speech and Conference Objectives  Jon Hobbs

9:00  Welcome on behalf of Madagascar: Our Hosts
- Mme. Ramalason Olga Vololodonirina, Mayor of Vakinankaratra, Antsirabe
- Mr. Rabenatoandro Lantoniaira, Chief of the Vakinankaratra Region
- The Hon. Andriamahefamparany Oliver Donat, Minister of Energy and Mines, Madagascar

Keynote Speakers

9:30  Views from the Public Sector  The Hon. Jean Kamoni Mokota Lissa
Deputy Minister of Mines
The Democratic Republic of Congo
Head of the DRC Delegation

The Hon. James B. Konuwa
Sr. Assistant Minister
Mines Mineral Resource Development & Conservation
Liberia

The Hon. Dr. Lami Hamza
Permanent Secretary
Ministry for Solid Minerals, Nigeria
Head of Nigerian Delegation

10:00  Views from the Private Sector  Gary O'Brien
President & CEO of QMM, SA
Member of the Rio Tinto Group

10:15  Views from the NGO Sector  Ms. Nanie Ratsifandrihamanana
Conservation Director, WWF

10:30  Coffee Break and Conference Photograph
Session Two: Welcome to Madagascar

11:00-11:15
Overview of Development and History of Madagascar.
Jean Louis Rabeharisoa
USAID

11:15-11:30
Good Governance in Madagascar and Application to Small-scale Mining
Andry Ralijaona
Bonne Gouvernance Directorate,
President's Office, Madagascar

11:30-11:45
A Case Study of Decentralization Management of Small-scale Mining in the Antaninbary Rural Municipality
Grégoire Rabenja
NGO Green, Madagascar

11:45-12:00
Commercialization of ASM Products.
Tom Cushman
Advisor
Gemmological Institute of Madagascar

12:00-12:15
Wealth at the Bottom of the Pyramid
Dr. Lucie C. Phillips
Consultant to USAID, World Bank and Government of Madagascar

12:15-12:30
Impacts of Small-scale Mining on Madagascar's Biodiversity
Martin Nicoll
Programme Director, WWF, Madagascar

12:30-12:45
A Modelling and Simulation Framework to Monitor ASM Activities in Developing Countries, an Example from Madagascar
Fenintsoa Andriamasinoroina (Research Scientists, BRGM, Orleans, France)

12:45-13:00
ASM in the Fianarantsoa Corridor: Is It Compatible with Biodiversity Conservation
Mark Freudenberger

Session Three: Policy Environments

14:00-14:20
Principles and Practice Of Mining Policy formulation
Michael Stanley
Policy Analyst, World Bank
Washington DC, USA

14:20-14:40
Tools for mining policy development and implementation.
Peter Nelson
Managing Director, Land Use Consultants,
Bristol, United Kingdom

14:40-15:00
Strategies for improving the management of natural resources and poverty reduction
Professor Chris Squire
Director, National Commission for Environment and Forestry
Freetown, Sierra Leone
15:00-15:20 Strategies for improving the management of natural resources and poverty reduction

Gary McMahon
Consultant to World Bank and the Global Development Network

15:30-16:00 Tea and Coffee Break

16:00-18:00 Session Four: Country Experiences

A selective review of worldwide country experiences during the Meeting on ASM and its implications to sustainable development and natural resource management.

16:00-16:15 Global Overview of ASM.

Kevin d‘Souza
Director, Wardell Armstrong, Stoke, United Kingdom and CASM SMAG

16:15-16:30 ASM experiences ASIA - case study Mongolia

Mrs. Chuluunbaatar Enkhhzaya
Advisor to the Chairman of the Mineral Resources and Petroleum Authority, Mongolia.

16:30-16:45 ASM in India

Professor Mihir Deb
University of Delhi, India

16:45-17:00 ASM experiences South America

Thomas Hentschel (Medmin, Bolivia) and Manuel Reinoso (Peru)

17:00-17:15 ASM experiences in Eastern Africa

Ketema Tadesse
Director General, Southern and Eastern African Mineral Centre (SEAMIC), Tanzania

17:15-17:30 ASM experiences - case study West Africa

Jo Bayah
Director, GeoConsult, Accra, Ghana

17:30-17:45 ASM experiences - case study Central Africa.

Leonard Kalindekafe
Director, Geological Surveys, Malawi

17:45-18:00 Discussion
Sunday, November 17

All Day Event  Poster Exhibition
All Day Event  Tech Show Exhibition
All Day Event  Minerals Market

Day Two of Technical Program

Hotel des Thermes
Hotel des Thermes
Train Station

8:30-10:30

Session 5: International and Regional Initiatives

8:30 - The Kimberley Process and the Diamond Development Initiative.

8:45 - The Mwadui Community Development Initiative, Tanzania: the DDI in action.

9:00 - Putting the Kimberley process to the test: Congo (Brazzaville) experiences.

9:15 - PACT's work in the Democratic Republic of the Congo.

9:30 - The relevance of the Extractive Industries Transparency Initiative to ASM.

9:45 - Natural resources assessment and management in post conflict environments.

10:00 - 'Keeping Minors out of Mining': the ILO programme to eradicate hazardous child labour from mining.

10:15 - The Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development.

10:30 - Coffee Break

11:00 - The ICMM resource endowment study, relevance to ASM.

11:15 - The industry view of 'cradle to grave' jewellery chain.

Andrew Bone / Simon Gilbert
De Beers, London, UK

Wilson Mutagwaba
Mwadui Project, Dar es Salaam, Tanzania

Miladene Barthelemy
Director General of Mines
Republic of Congo

Karen Hayes
Director, PACT, Kinshasa and Washington DC

Danny Graymore
Department for International Development, UK
and EITI Secretariat

Grant Wroe-Street
United Nations Environment Programme
Geneva, Switzerland

Sophie De Coninck
ILO, Kinshasa, DRC

Lois Hooge
Natural Resources Canada, Johannesburg contact

11:15 - Paul Hollesen
Anglo Gold Ashanti, Johannesburg, South Africa
and International Council on Mining and Minerals, London UK

11:30 - Santiago Porto
Programme Director, Council for Responsible Jewellery, London, UK
11:30-11:45 The Association for Responsible Mining and future collaboration with CASM

11:45-12:00 The GEF Global Mercury Project

12:00-12:45 Session Six: The CASM AGM

12:00-12:15 The CASM Annual Report and Plan as approved by the SMAG

12:15-12:45 Regional CASM Reports and Plans (10 minutes each)
- Africa: Linus Ade, Nigerin and Nellie Mutemeri, South Africa
- Asia/Pacific: Dr. Satoshi Murao, AIST, Japan and Chen Shick Pei Director, CCOP, Thailand
- China: Professor Lei Shen, China
- Latin America: Manuel Reinoso, Peru

12:45-13:00 Lunch

13:00-15:00 Session Seven: Thematic Working Groups (Part One)

14:00-14:20 Working Group #1 - Finding innovative solutions to conflicts and encroachment of ASM into protected and conservation areas.

14:20-14:40 Working Group #2 - The role of ASM in civil strife and the reconstruction process - with a particular focus on the African Great Lakes Region and West African experiences.

14:40-15:00 Working Group #3 - The progress of employing technological innovation to improve the Health, Safety and Environmental performance of ASM.

15:00-15:30 Coffee break

15:30-18:00 Breakout-Group Discussions

KEY QUESTIONS FOR EACH GROUP:
- THE THREATS: What are the Key problems, Issues, Risks and Hot Spots?
- TO: Where has some success been achieved in addressing them?
- THE OPPORTUNITIES: What actions would you like to encourage CASM to undertake in the search for progress and solutions?
Working Group #1 - Discussion
- Finding Innovative solutions to conflicts and encroachment of ASM into protected and conservation areas.

Coordinator: Lalalison Raziafintsalama

Working Group #2 - Discussion
- The role of ASM in civil strife and the reconstruction process - with a particular focus on the African Great Lakes Region and West African experiences.

Coordinator: Gotthard Walser

Working Group #3 - Discussion
- The progress in employing technological innovation to improve the Health, Safety and Environmental performance of SAM.

Coordinator: Dr. Nellie Mutemeri

18:00 Evening free to continue with Working Groups or organised side events.
Monday, November 13

Day Three of Technical Program

All Day Event  Poster Exhibition  Hotel des Thermes
All Day Event  Tech Show Exhibition  Hotel des Thermes
All Day Event  Minerals Market  Train Station

9:00 - 10:00

Session Eight: Thematic Working Groups (Part Two)

Introduction to last three Thematic Working Groups
Chairman: Charles Loots, AngloGold Ashanti, South Africa and CASM SMAG

9:00 - 9:20  Working Group #4 - Managing the relationship between
Large scale mining companies and ASM.
            Kevin D'Souza
            Director, Wardell Armstrong LLP, UK and
            CASM SMAG

9:20 - 9:40  Working Group #5 - The establishment of fairer trade and
ethical standards and systems for ASM and the need to
expand traceability to other commodities beyond diamonds.
            Christopher Sheldon
            World Bank

9:40 - 10:00 Working Group #6 - Addressing Gender, Human
Rights and Multiculturalism in Responsible small scale Mining.
            Catalina Cock
            Chairperson, ARM, Colombia
            Jennifer Hinton
            Uganda

10:00 - 10:30  Coffee break

10:30 - 13:00  Breakout-Group Discussions

Key questions for each group:
- The threats: What are the key problems, issues, risks and hot spots?
- To: Where has some success been achieved in addressing them?
- The opportunities: What actions would you like to encourage CASM to undertake in the
search for progress and solutions?

Working Group #4 - Discussion
- Managing the relationship between large scale mining companies and ASM.
            Coordinator: Kevin D'Souza

Working Group #5 - Discussion
- The establishment of fairer trade and ethical standards and systems for ASM and the need to
expand traceability to other commodities beyond diamonds.
            Coordinator: Christopher Sheldon

Working Group #6 - Discussion
- Addressing Gender, Human Rights and Multiculturalism in Responsible small scale Mining.
            Coordinators: Catalina Cock and Jennifer Hinton

13:00 - 15:30

Session Nine: Report back from Workshops
Co-Chairs: Jörn Wobrock and Gerhard Walter, CASM

14:00-  Six Working Group Rapporteurs present their conclusions and recommendations:
15:30   - Each presentation to be presented in PowerPoint for recording purposes and to be 10 minutes
         maximum each- allowing 5 minutes discussion and clarification.

15:30-  Coffee Break
16:00-

**Session Ten: Closing Ceremony**

16:00-  Presentation on Field Trips and Logistics.
16:15-

16:15-  Closing Remarks and Discussion
17:00   - Statement read on behalf of The Hon. Mr. Jargalsaikhan, Mongolian Minister of Industry and
         Trade, (by Dr. Chuluunbatar Enkhzaya)

17:30   Personal Networking Sessions
Optional Field Trips

Tuesday, November 14

Information to be distributed...

Wednesday, November 15

Information to be distributed...

FEES:
Registration: $15 for national and $30 for international

Those meals and coffee breaks highlighted in grey are provided courtesy of the conference organizers for all participants.

Transportation in Madagascar will be organized by CASM.