

Sustainable Development Strategies Group

MINE CLOSURE PLANNING IN THE FRAMEWORK OF SUSTAINABLE DEVELOPMENT

Luke Danielson and Marketa Zubkova

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Rocky Mountain Mineral Law Foundation

Special Institute on Mine Closure, Financial Assurance, and Final Reclamation

SOME BASIC IDEAS

- > The impact of a poorly managed mine site can be quite serious, and the impacts can last a very long time. This can continue to get worse over time.**
- > The cost of dealing with the worst sites strains government even in the richest countries. In poorer countries, if the company does not reclaim the mine, chances are it will not be stabilized, because in many cases government simply does not have the money to do it.**

STARTING IN THE 1970S

1. We have made significant progress in the environmental management of mine sites.
2. At least in the rich countries, we are not adding much to the legacy of abandoned unreclaimed sites
3. At least in the rich countries, We are stabilizing many of the abandoned sites of the past.

THE NEXT CHALLENGE

- 1. The minerals industries have come under increasing pressure to show concretely that they can deliver real and sustainable social and economic benefits to the communities and countries in which they do business.**
- 2. It is clear that we have not adequately considered the economic and social aspects of closure.**

WHAT CAN MINING OFFER COMMUNITIES?

- 1. If we are focused on the social license to operate, communities are right to ask what kind of 'deal' mining offers.**
- 2. If the deal is jobs and local economic activity for as long as the mine is open, and followed by economic collapse, social problems and ghost towns, communities are right to be frightened.**

In using mineral revenues for development, there are three historic problems:

FIRST, THE LAG: The impacts of mineral development need to be managed, at considerable cost, for some years before the project starts yielding revenue. If thousands of construction workers show up in the community before there is any tax revenue to pay for schools, police, hospitals and other services, it is unclear how all these services can be financed.

SECOND, THE CYCLES: Mining revenues are cyclical. In down years, where there may be unemployment and lower business activity in the mining community, there are usually increased demands for social spending. But these increased demands coincide with lower revenues.

THIRD: THE END OF LIFE CHALLENGE.

The impacts that need to be managed tend to continue after revenue stops flowing. Government, local businesses, and individuals need to find new opportunities for livelihood, and this costs money.

If we have made economic and social gains during the project life, can we maintain these?

Despite the lack in most cases of an established legal liability, powerful forces are pushing companies into accepting greater responsibilities. But they are not at all clear how much of the responsibility is theirs and how much belongs to government.

It is very much better to plan for closure from the outset. If the closure plan is hastily developed in the last year or two of a mine's life, the chances for success are dramatically reduced.

This is true of the economic and social part of closure. There needs to be an agreement at the outset as to who has what role and who will pay for what. Trying to reach that agreement toward the end of the mine life is difficult.

Some Examples

1. These are not 'average' mines
2. Selected because they are large, have been in operation a long time, and are distant from alternative sources of employment
3. We would therefore expect to see any effects at their most extreme

CERRO DE PASCO, PERÚ



POPULATION: 80,000

ECONOMY: MINING





Health & environmental problems



- Residents suffer from the lead dust, toxic gases and heaps of accumulated dumped waste;
- Some people have about 3 times more lead in their blood than the international threshold of the World Health organization (WHO) levels; 85% of the children have too much lead in their blood;
- The high levels of lead can cause auto immune diseases, cancers, migraines, and concentration problems;

Plan L -Relocation

- > Imminent threat of closure
- > Open pit has been considerably restricted due to a lack of space for mine expansion.
- > Volcan (the company) has submitted “Plan L” that would vacate 11.4 hectares of the city, pushing the pit wall closer to the main square.
- > This would move many people out of the most contaminated zone
- > Plans are to relocate the residents in a 15-20 year process.
- > The estimate cost of the project is \$500 million; Volcan has agreed to invest \$10million.
- > The relocation is on hold

VOLCAN COMPAÑIA MINERA S.A.A.
SISTEMA DE MONITOREO CORPORATIVO
Plan L : Vista Panorámica
Unidad : Cerro de Pasco

PLAN L



"One thing is for sure, there's not much future round here. You can only be a miner round here because you can't live from being a community member, working the land, the farm. The people who work the farm do it as an extra, they have to work in the mine or as a trader or in transport too. You can't live ... the way our grandparents did."
Andrés, M/80s, farmer/retired mechanic

1. The old livelihoods are no longer viable
2. There is no clear plan for a post-mining future
3. Without mining, there are no revenues for environmental cleanup



EL SALVADOR, CHILE





Population: 10,000 in El Salvador district (7,000 in the town of El Salvador)

Today 1,800 staff members work in El Salvador, another 2,500 employees are contractors and service providers and about a thousand more work in public transportation and other businesses related to the mine.





Significant
environmental
issues

Beach of tailings

Mine closure



The El Salvador economy is entirely based on mining. When the mine closes in 2011 other businesses and services will have to close too. There will be high rate of unemployment and much of the community will have to move out. Mine closure will produce a domino effect because it will impact not only the El Salvador district but also other districts and communities surrounding El Salvador.

“We cannot forget our roots.”

“I can’t imagine the empty streets, abandoned houses; we have our roots here and we cannot forget that,” doña Ada, El Salvador storekeeper.



OK TEDI, PAPUA NEW GUINEA



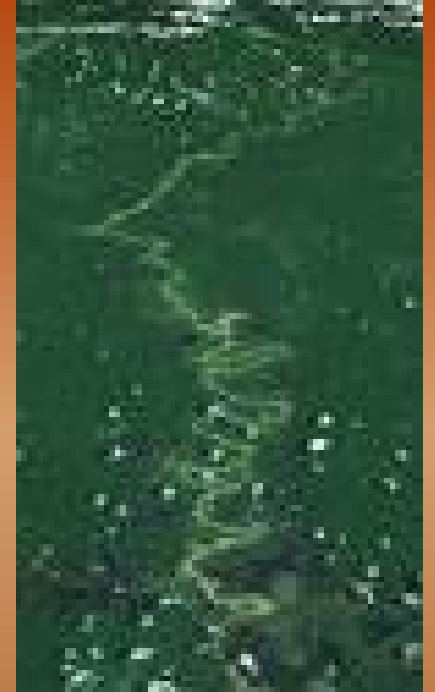


- > Estimated population of 13,800 people in the town of Tabubil
- > 2,100 employees are working in the mine.
- > Businesses that work under contract to the mining company employ approximately 1,500 people; the mine has also employed 600 staff as apprentices and provided training or education for over 3,000 people.
- > People still live very close to their land and agriculture supports 75% of population. Some have begun business ventures in natural resources such as rubber, rice, pineapples, ecotourism, timber or fish. Few people have invested substantially in commercial activities or the education of their children.



Mine waste discharge issues

- > Annual discharge of millions of tons of mining waste has harmed the environment and livelihood of 50,000 people who live on or near the Ok Tedi River.
- > This has changed the riverbed causing a relatively deep and slow river to become shallower and develop rapids thereby disrupting indigenous transportation routes.
- > Flooding caused by the raised riverbed left a thick layer of contaminated mud on the plantations of taro, bananas and sago palm that are staples of the local diet.
- > These economic and environmental impacts will continue long after mining



The effects on the Ok Tedi River will last another 60 years and that the effects on the Middle Fly River may last hundreds of years.

Traditional livelihoods may not longer be viable

Where I used to make gardens,
the mudbanks have built up.

Where I used to catch prawns and fish,
there is an empty pool . . .

So I feel like crying.



Before it wasn't like this.

We had no difficulty finding food from our gardens and wil

We had everything we needed.

Now we are suffering and I wonder why.





Residents of the mine-area community have become almost entirely dependent on the mine for their livelihoods, which makes them vulnerable to the impacts of mine closure. It is generally assumed that they will not be able to maintain their current lifestyle or continue to reap economic gains as they have during the life of the mine.

Most settlers are expected to leave when the mine closes in 2013.

EL CHINO, NEW MEXICO



A
PERSONAL
NOTE





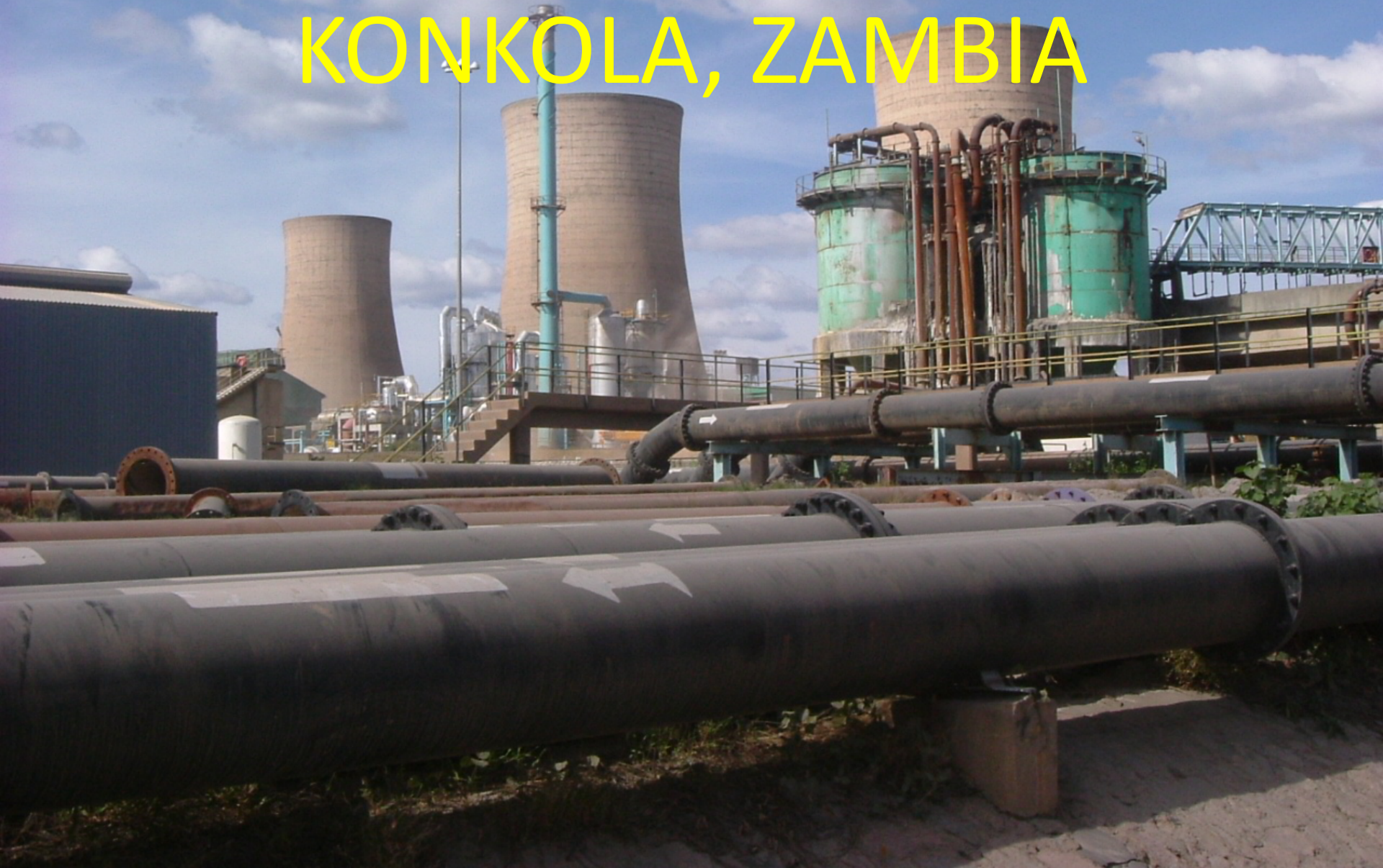
El Chino Mine is located in Hurley (1,400 people) and 15 miles east of the historic mining community of Silver City (12,000). Mine employed 1,250 residents.



In current market conditions, mining has been suspended and the concentrator is being held on a care and maintenance status. More than 800 workers were placed out of work.

Those families, who have depended on mining to provide a good living over the years must find another job or leave the area.

KONKOLA, ZAMBIA



Konkola mine is located in Chililabombwe

The town has a population of over 55,000 with almost all economic activity related to the mines.

Zambia is a very poor country

It is not clear how the economic and social part of closure could be handled.



Are We Seeing A Pattern?

1. In general, traditional closure planning has not focused on these issues
2. In many instances, we cannot return to pre-mining livelihood systems
3. The social part of closure is expensive, and if planning is left until the end of the mine life, it is very hard to get agreement as to who pays for what
4. Often an important relationship between the environmental issues and the socio-economic issues
5. All of these communities are in deep conflict and having a terrible time making decisions

SOME CONCLUSIONS

Governments and companies are under considerable pressure to keep these projects in operation, because in most cases neither companies nor governments are really in a position to manage the social and economic (and environmental) impacts that would result from closure.

The fact that keeping the economic benefits flowing from projects like these is such a high priority for the public makes it a high priority for government. The result is a considerable degree of government involvement in all of these projects, and deep government entanglement in their future.

MORE CONCLUSIONS

The high stakes and lack of any clear structure for making decisions, and lack of clarity as to the boundaries of company and government roles mean that in each case there is a fragmentation of the community, with multiple factions promoting multiple objectives, often resulting in something that looks a good deal like a political gridlock.

Decisions on closure of these facilities seem to be very hard to reach. There are announcements of closure, adverse public reactions, further study, and changes of plan. No decision ever seems to be final.

FURTHER CONCLUSIONS

In none of these cases can we detect much evidence that there has been from the outset a plan for closure dealing with the anticipated economic and social dislocation of closure. To this extent that there are such plans, they seem to be relatively recent and created only as the specter of closure becomes imminent.

In each case there seems to be a real prospect that some of the communities or subgroups that have been able to use mining to improve their social and economic position during the mine life may well lose some of those gains when the mine closes; i.e. the benefits do not all look sustainable.

The TOOLKIT states four goals:

- 1. Minimize the negative consequences of closure;**
- 2. Maximize the positive benefits of closure;**
- 3. Minimize the likelihood that closure goals are not met; and**
- 4. Maximize the likelihood that opportunities for lasting
benefits are captured.**

We believe that the trend toward integrated closure planning will continue, driven by:

- 1. The increased difficulty companies have in making a 'clean break' from projects at the end of their useful life, especially where the project has created an island of relative prosperity in a sea of continuing poverty;**
- 2. The continuing difficulties countries have in trying to keep projects operating where closure would have social and economic consequences that government is not prepared to manage;**
- 3. The desire of companies to make decisions about the future of projects based on commercial calculations rather than political factors; and**
- 4. Continued progress toward a model of sustainable development, in which there is ever greater emphasis on trying to sustain the benefits achieved during the project life.**