

# Mine Closure

## An Overview of the Issues

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by

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– Thank you Mr. Director.

- Good Morning ladies and gentleman, my name is John Strongman. I am the Mining Adviser for the World Bank Group.

- I am very pleased to be able to talk to you this morning on mine closure.

- It has become a very important topic for the mining industry world wide, both for private mining companies and for state owned mining industries,

- I am pleased to share some experience and views from the perspective of someone who works for the World Bank Group.

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**Note:** the views expressed in this presentation over those of the author and should not be attributed to the World Bank, its management or its Board of Directors.

## Why Does Mine Closure Matter?

“Today, closing mines successfully has become more problematic than opening mines successfully”

Senior official from an international mining company, October 2000.

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-According to my discussions with many government officials, companies, communities and non-governmental organizations over the past two to three years, mine closure is now one of the most difficult issues facing the world mining industry.

- One senior official from a major international mining company said to me earlier this month: “Today, closing mines successfully has become more problematic than opening mines successfully”

## A. INTRODUCTION

### 1. Why Does Mine Closure Matter?

- For Mining Companies
  - potential safety, environmental and social risks
  - potential liabilities if closure goes badly
- For Governments
  - risk of abandoned mines, social unrest
  - closures of large large state enterprises
- For Communities
  - threat of economic and social collapse

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-So what is it that makes mine closure so important and so difficult.

- First, it is a complex task that involves significant potential safety, environmental and social risks. If done badly, or not at all undertaken, there can be serious health and environmental damages.

- Second, poorly done mine closure can cause substantial financial liabilities for companies. Also governments can face substantial liabilities if mines are abandoned and companies walk away.

-Third, in many countries, especially in Eastern Europe and the Former Soviet Union, governments are having to close as much as half of the state mining industry because it is not economic.

- Fourth, mine closure brings the threat of economic and social collapse especially for communities in remote locations.

- Finally, with large investments in new mines in the 1960s – 1980s, we are now entering a period where there will be a large number of mines needing to be closed every year for many years to come.

## What is Present Situation Around the World?

Mine Closure is nothing new - there is a long history of mine closures around the world, but with very mixed results

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- Mine closure is nothing new.
- There is a long history of mine closures around the world
- But with very mixed results.
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## A. INTRODUCTION

### 2. Present situation Around the World

Regions	Historical Legacy of Abandoned Mines	Large State Mining Industry Closure	Government Well Prepared Today for Mine Closure	Responsible Mine Closure Today
N. America Australia	Many	None	Yes	Mostly
Europe	Some	Yes	Yes	Mostly
Asia, Africa Latin America	Some	Few	No (now starting)	Some
Former Soviet Union E. Europe	Few	Yes	No (improving)	Some

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-This chart takes a “helicopter” view of the situation around the world.

- In North America and Australia the past record is poor. There are many mines that have been abandoned over the past century or so. But today the situation has improved. Most jurisdictions are well prepared for closure, which is taking place mostly in a responsible manner.

- But there are exceptions. For example the State of Nevada in the USA presently has 37 mines sites which have gone bankrupt. All are “bonded” and the bond will need to be called at half or more of them. But in some cases the bonds are too small and in others the bonding company faces bankruptcy. Thus, the State may face a large bill for clean up.

- In Europe the historical position is not so bad and responsible mine closure is mostly taking place.

- In Asia, Africa, Latin America, Eastern Europe and Former Soviet Union, the historical legacy is not too bad. But the present performance is very mixed. A few countries are making sure mine closure is done properly, but it mostly depends on the companies. In Namibia, four foreign mining companies have walked away and abandoned mines literally over night. In countries like Russia Federation, Romania, Poland and Ukraine the Governments have had to close in aggregate about 300 coal mines and lay off nearly one million miners in less than a decade with consequent difficulties.

## A. INTRODUCTION

### 3. Role of World Bank Group - Lending

- Lending for mine closure and social mitigation
- US\$ 2 billion lending mostly to Former Soviet Union and Eastern Europe countries
- Strong Participatory approach
  - Stakeholder identification and consultation
- Monitoring performance indicators
  - Informing stakeholders

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- What does the World Bank Group know about mine closure and what are we doing? First, we make loans to countries for mine closure and social mitigation. In recent years, we have made eight such loans (to Russia Federation, Ukraine, Poland, Romania and Zambia) totaling about US\$2 billion.

-About two-thirds of our loans have been used by borrowers for social mitigation—which includes income support, severance payments, re-training, micro enterprise schemes, and work space conversions.

-The other third has been used by borrowers for physical mine closure to make sure it takes place in an environmentally satisfactory manner. This includes filling shafts, demolishing buildings, removing plant and equipment, reclaiming worked out land, repairing the effects of subsidence, and rehabilitating and re-vegetating mine sites.

-We have required the borrowers to use a strong participatory approach which requires consulting with various stakeholders including communities directly and indirectly affected by the closure.

-Performance indicators have been identified to monitor progress and monitoring results have been provided to stakeholders.

## A. INTRODUCTION

### 4.Role of World Bank Group - Providing Guidelines

- Environmental and Social Safeguard Policies
  - Environmental Assessment/Management Plan; Natural Habitats; Dams; Indigenous People; Involuntary Resettlement; Cultural Property
- Pollution Prevention and Abatement Handbook
- Occupational Health and Safety Guidelines
- Environmental Assessment Handbook (& updates)
- Participation Handbook

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All World Bank Group lending takes place according to World Bank/International Finance Corporation operational guidelines and directives. These includes six important safeguard policies which relate to

- Environmental Assessment (including Environmental Management Plans.)
- Natural habitats
- Dams
- Indigenous people
- Involuntary Resettlement
- Cultural Property

Other important handbooks and guidelines include

- Pollution Prevention and Abatement Handbook
- Occupational Health and Safety Guidelines
- Environmental Assessment Handbooks

These guidelines and handbooks are used for good practice on a voluntary basis by many private sector companies.

## A. INTRODUCTION

### 5. World Bank Role – Information Dissemination and Advice Regarding Good Practice

- March 2000 Mine Closure Workshop, Washington DC (proceedings published by Mining Journal, October 2000)
- Ad hoc consultation with governments, mining companies, communities and NGOs
- Business Partners for Development Focus Project - Kelian Mine closure (ongoing)

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-In addition to lending for mine closure, an important role for the World Bank Group Mining Department is information dissemination and providing advice regarding international experience and good practice for mine closure. We have an extensive dialogue with the major stakeholders namely governments, mining companies, communities and NGOs.

-Recognizing the limited literature available, in March 2000 we organized a Mine Closure Workshop in Washington DC with 80 participants involved together with the metal Mining Agency of Japan in mine closure, representing more than 20 countries. The workshop proceedings were published this month and are available at a modest price from Mining Journal.

- This presentation takes heavily from the presentations and discussions at that workshop. It also reflects my discussions with the mining companies respectively preparing the Kelian Equatorial Mine in East Kalimantan and the Misima Mine in Milne Bay Province, Papua New Guinea for closure.

-Kelian is a “focus project” in the Business Partners for Development Program, for which the World Bank Group is one of the founding sponsors.

## B. WHAT IS INVOLVED IN MINE CLOSURE?

- 1 Environmental Protection
- 2 Disposal of Assets
- 3 Social Mitigation
- 4 Funding for Mine Closure
- 5 Legal, Regulatory and Fiscal Regime
- 6 Mine Closure Planning

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-What is involved is Mine Closure?

-There are five main aspects, namely

- environmental protection
- social mitigation
- disposal of assets
- mine closure funding,
- legal, regulatory and fiscal regime,
- mine closure planning

In this regard, I should note an excellent draft strategic framework for Mine Closure provided in a discussion paper which has been prepared and published by the Australian and New Zealand Minerals Energy Council and the Australian Minerals Industry. It addresses: stakeholder involvement, planning, financial provisions, management, standards and relinquishment.

More details are given in a paper by Bill Biggs, of the Western Australian Department of Mines and Energy, in the Proceedings of the March 2000, Washington DC Workshop.

## Environmental Protection

“Mining is a relatively short term land use; therefore, it is important that disturbed lands are returned to a safe, stable and productive post mining land form that is both suitable and acceptable to the local community”

Meredith Sassoon, Environmental Specialist

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It is important to place mining in a much longer time frame than is needed just for operating this mine.

From the community stand point mine “closure” is only the end of the mine operating life but is also the start of a new chapter in the life of the community.

Correspondingly, badly done closure or abandonment gives the community a terrible start to the post closure phase.

## B. WHAT IS INVOLVED

### 1. Environmental Protection

- Stabilize and secure pits, dumps, impoundments etc
- Demolish and/or remove plant and equipment
- Detoxify hazardous materials
- Protect and clean up groundwater
- Dewater where necessary
- Protect from acid rock drainage
- Rehabilitate and revegetate

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- The old approach has often largely been for mining companies to take care of any surface safety hazard and secure the pits - flooding open pits and, where needed, providing for pumping or drainage of water from underground working nearby and sealing the entry ways, shafts and adits.

-But this is no longer sufficient.

-Good practice today requires, stabilizing and securing waste dump and impoundments, detoxifying hazardous material, protecting ground water, addressing any acid rock draining issues (which can be a terrible problem) and reclaiming, rehabilitation and re-vegetating land in a manner compatible with local vegetation

-Such environmental protection and clean up applies not only to the mine site but also to all to locations affected by the operation including any rivers, ports and other transshipment points some of which may be a hundred miles or more from the mine site.

-Examples of successful post closure mine include a retirement community (Elliot Lake, Canada), Wildlife Sanctuary and Conference Center (Ridgeway, USA), Fish Breeding (Island Copper, Canada) and Wildlife Attraction (Bambuni, Uganda - ongoing)

## B. WHAT IS INVOLVED

### 2. Disposal of mine assets

- Assets to be sold and removed
  - e.g. re-usable plant, equipment and spare parts
- Assets to be demolished or removed
  - e.g. major plant, equipment and buildings
- Assets that remain and need to be made safe, secure and stable
  - e.g. dams, dumps and impoundments
- Assets to be transferred and continue operation
  - e.g. social assets and infrastructure

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-Most mine production assets have little value at closure. Those that can be sold—possibly some plant and equipment that is still usable, stockpiles of spare parts (providing they are useful or not obsolete) should be sold.

-Otherwise where feasible assets such as plant and equipment need to be demolished or dismantled and removed.

-Some assets such as tailings impoundments, open pit and underground mine workings and dumps cannot be removed, and these should be stabilized and made secure and safe. This is a serious task—those are many historical examples of loss of life or severe environmental harm because of an improper approach being used.

-Important social or productive assets and infrastructure should be transferred, usually to government, a nongovernmental organization or the community so that it can be maintained and operated after the mine closes.

-But it must be recognized that plant like a 50 MW power plant which is well connected to the mine site but only partially connected to surrounding villages and hamlets may simply not be an economic asset to be maintained or operated by the community in the post closure period.

## Social Mitigation

Mine closure typically means a sharp drop in the standard of living for the local community and the region.

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Mine closure is often traumatic for local communities--especially in remote areas if local government is weak, labor productivity and non-mining incomes are low and labor mobility minimal.

Careful consideration should be given to fiscal provisions and sharing the benefits from the mine to that they result in long term benefits to the community not simply short term consumption. In Papua New Guinea, there is a “Future Generations Fund” that protects some benefits for use by subsequent generations. There is also an infrastructure incentives scheme whereby, subject to certain rules, companies can use part of their income tax payments to construct infrastructure projects agreed with local communities.

## B. WHAT IS INVOLVED

### 3. Social Mitigation

- Mitigating impacts on employees
  - Voluntary redundancy schemes, retraining etc
- Mitigating impacts on the community and others whose jobs depend on mining
  - Ensuring food security and service delivery
  - Protecting the most vulnerable
- Mitigating impacts on a local government
  - Tax revenues fall as demand for services increases

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How can the social impacts be mitigated.

First, there is the provision of redundancy payments, re-training schemes and voluntary redundancy schemes. Advance payment of part of the redundancy package so that workers can purchase land in a phased manner can be very helpful. This could help avoid a large “land rush” driving up land prices if severance payments are all released at the same time. In such a case half a year or more of income may flood into the community at one time.

Second, food security planning, agricultural training and other support will be needed to ensure that villages (who may have come to purchase as much as half their food thanks to their mine-related wages) can re-establish the ability to again grow all they need.

Third, initiatives to identify and provide a poverty alleviation safety net for the most vulnerable -older people, children, and single mothers - who may be least able to find ways to cope when the community income drops.

Fourth, and very importantly, revenue stability initiatives and possibly trust funds or other mechanism are needed to help local governments who are often faced with the twin difficulties at mine closure of income declining at the same time that service demands rapidly increase.

Where mining communities have established living standards well above other non-mining communities in the region, a very difficult issue is whether to try and sustain these higher incomes after mine closure or let living standards fall back to the much lower level of non-mining communities.

## B. WHAT IS INVOLVED

### 4. Funding for Closure

- Cost estimates that are improved over time
  - How much is enough?
- Mobilizing funds for closure
  - Internal or external sources ?
  - Ensuring funds are there when needed
- Providing for unexpected problems
  - Trust funds, warranties, insurance

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– Funding for closure involves setting aside funds progressively over the life of the mine so that sufficient funds are available to cover closure costs.

- Obviously, very good cost estimates are needed in order to make sure that sufficient funds are available. Initial cost estimates should be prepared early in the mine life (preferably before the mine opens and should be updated systematically on a regular basis (every five years for a 30 years mine life, every two years for a 10 years mine life)

-If the mine is progressively rehabilitated during the operational phase, the cost at the time of final closure should be much lower.

-Various funding instruments exist, such as “closure bonds”, warranties, securities and insurance—the key is that the resources exist for the mechanism to be used when it is needed.

-Such instruments can also be useful to provide funds for dealing with unexpected problems should they arise during or after closure.

-While they may be considered separately, “social” costs related to redundancy payments, trust funds, transfer of social assets, contributions towards future maintenance and operations of social assets also need to be estimated and funded.

## B. WHAT IS INVOLVED

### 5. Legal, Regulatory and Fiscal Regime

- Establishing a proper legal framework
  - Licensing to include an initial mine closure plan and arrangements for funding the work
  - Setting environmental compliance standards
  - Requiring effective consultation
- Establishing the mining fiscal framework
  - Collecting taxes and distributing benefits
- Incentives and assistance to help communities

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-Some countries and jurisdictions (especially in North America and Australia) have established detailed mine closure requirements and procedures. But for most countries there is presently little or no applicable laws, regulations, standards and norms.

-But a good mine closure legal framework is needed for the mine operator to know what is required and for government to allocate clear authority and responsibility to different ministries and units (at the central, regional and local levels) to ensure mine closure takes place properly and that adequate monitoring take place after closure.

-The legal framework should require an initial Mine Closure Plan at the licensing stage to be updated on a regular basis. It should also specify the provisions for closure funding

-The legal regime should also specify the requirements and procedures to ensure that effective and meaningful consultation takes place with local communities.

-For Indonesia, the demarcation between the authority of the central government agencies and the provincial and local agencies remains to be clearly specified and is urgently needed.

-Since “Contracts of Work” have little provision regarding mine closure, it will be important also to have legal provisions to ensure that mine closure requirements fully apply to “CoWs”.

-The fiscal regime should ensure that specific benefits are received during mine life by local communities. These help compensate for the “costs” of mining borne by the local community, and can be used to develop non-mining business activities which can greatly help reduce dependency on the mine if used well. The fiscal regime can also provide incentives to encourage non-mining business development to help ameliorate the effects of mine closure on the communities.

## B. WHAT IS INVOLVED

### 6. Mine Closure Planning

- Based on statutory requirements; corporate standards; and community consultation
- Includes cost estimates, time line and milestones
- Defines final land form and configuration
- Identifies and address risks and uncertainty
- Integrates with operational plan (esp. environment)
- Defines implementation and post closure monitoring arrangements

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The final mine closure plan needs to meet statutory or regulatory requirements. It should also meet corporate standards and should also respond to concerns of important stakeholders including the local communities.

But in many cases statutory requirements are largely non-existent. In such cases, it is important that government has good information regarding the expected timing of future mine closures so that rules and regulations can be put in place in a timely manner.

This is not so much a problem where mine closure may be five to ten or more years away, but if mine closure is expected in the next one or two years then immediate action is needed to discuss with the company what is planned and forewarn the community.

Mine closure plans need to clearly present time lines and costs. Most importantly, they need to specify the expected final landform and provide a risk assessment to help set priorities for preparatory work. Cost benefit analysis can be an important tool for selecting between different options as the plan is being prepared, reviewed and updated

To the extent possible the mine closure plan should be integrated with annual mining plans - especially regarding environmental protection. The closure plan should also present a management plan for how the closure will be implemented and should propose post closure monitoring arrangements.

## It is never too early to start mine closure planning

Communities want mines because they  
bring modern services (especially health  
and education) and higher incomes to  
remote areas

but these are the very things that are not  
easily sustainable at closure

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One of the most important lessons that mining companies is that mine closure planning can have a profound effect on the design of a mine - including very importantly social infrastructure.

In the case of one mine in a remote location, a state of the art modern hospital was built for the community only for the mine to discover that what was wanted and needed by the community was much more basic health care including better access to everyday medicines and to inoculations, as well as some modest improvements in water supply and sanitation.

Had the company undertaken better consultation with the community in designing the mine and considered the implications for mine closure, they would have looked at how they could work with local government to provide more of the everyday health services that the community really wanted, probably at a lower overall capital investment and would not today have an asset that may prove problematic to hand over, maintain and operate when the mine closes.

## C. GUIDING PRINCIPLES

### 1. Start Closure Planning at Feasibility Stage

- Early planning can provide important insights for mine and infrastructure design and for waste disposal methods
- Rehabilitation can be built into operational phase and closure cost reduced
- Facilitates early hand over of social assets
- Overall makes good business sense

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An initial mine closure plan is best developed at the time of mine licensing. This can have several important benefits.

Several mining company executives have said that there are some mines with very large potential environmental liabilities today which would never have been developed if an initial mine closure plan had been developed at the feasibility stage.

In other cases, company executives say that an initial mine closure plan might have influenced key technology and waste disposal choices which would have enabled rehabilitation to be built into operational activities at a lower cost over the overall mine life.

Also, such a plan might have resulted in different decisions regarding the size and location of townships and other social infrastructure.

## Consultation

Stakeholders are people and communities directly or indirectly affected by mine closure and/or those who can have a significant impact on the outcome of mine closure

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The Bank places great emphasis on consulting with stakeholders - Stakeholders are people and communities directly or indirectly affected by mine closure and/or those who can have a significant impact on the outcome of mine closure

## C. GUIDING PRINCIPLES

### 2. Consultation should take place at all stages

- If done well, can lead to improvements in both mine design/operation and in community living conditions - a “win win” situation
- If done well, can also lead to programs of joint monitoring and even joint decision making on selected matters
- Makes getting the “Exit Ticket” easier

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There is a fundamental divide between the interests of mining companies and the interests of the communities where mining takes place.

Mining companies typically want to develop mines, achieve a good return for shareholders, then leave when production is finished - so that they can develop more mines and continue to produce elsewhere.

Communities on the other hand want to see wealth and income opportunities created in their midst that will last over time - so that the community standard of living improves and successive generations can live better than their forebears.

Consultation offers the vehicle to bridge this gulf.

If done well it offers important possibilities to improve mine design and operation, to undertake joint monitoring (for example the Porgera mine in Papua New Guinea) and could also lead to joint decision making especially regarding social assets before and after mine closure.

Thus, there is a business case for consultation - especially for mining companies that want to see the local community benefit from their presence - and see benefits sustained after the mine closes.

## Mining and Waste Disposal Methods

Post-closure monitoring in many cases  
will last longer than the  
operating life of the mine

At Elliott Lake in Canada monitoring  
will last fifty years, at Ridgeway in  
North Carolina -forty years

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Some jurisdictions, especially in North America, are now starting to hold companies accountable for monitoring and ameliorating environmental impacts for several decades - as in the case of Elliott Lake and Ridgeway.

## C. GUIDING PRINCIPLES

### 3. Avoiding mining and waste disposal methods that will have impacts for generations to come

- Acid rock drainage impacts can last a century or more e.g. Equity silver mine in Canada
- Releasing toxic material into the community e.g. Super Fund clean up of lead mines in USA
- Riverine disposal of very large mine wastes e.g. OK Tedi mine in Papua New Guinea

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There have been great strides in scientific, environmental and health knowledge over the past century and many past practices are now recognized as potentially very harmful.

In particular, acid rock drainage is now recognized as having harmful environmental effects for many decades and beyond if left unchecked.

Toxic materials including base metals can prove a serious human health threat if not properly handled and cleaned up.

Recent studies show that some waste disposal methods may have consequences for many decades to come.

With today's knowledge of such environmental impacts, best practice is to avoid mining and waste disposal methods that may have impacts for generations to come.

## D. INSTITUTIONAL ARRANGEMENTS

### 1. Implications for Government

- **Licensing Role**
  - establish legal framework for mine closure
  - establish fiscal framework for mine closure
- **Regulator and Administrator**
  - enforce the closure rules and monitor performance
  - ensure effective consultation procedures
- **Service Provider**
  - integrate mine closure into regional development plan
  - deliver services to local community

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Government needs to set a clear legislative and fiscal framework. The initial licensing procedures and requirements can be used to initiate the process of mine closure planning and community consultation.

In Indonesia, new understandings are needed between the central and provincial governments regarding how taxes will be collected in future and clear rules are also needed regarding exactly which taxes are subject to the new revenue sharing arrangements between the regency (municipality) where the mine is located (32%), other regencies in the same province (32%), the province (16%) and the central government (20%).

Much work is also needed also to specify administrative and regulatory responsibilities between federal, provincial and local authorities (typically federal authorities set uniform rules for the sector), but monitoring and enforcement can be done at the local level, providing the necessary capacity exists.

Finally, to the extent that local/provincial government can successfully integrate a mining project into the regional development plan, this can help reduce the dependency of the region on the mine and can create a context for planning and delivering social services (e.g.. health and education) by government rather than by the mine.

## D. INSTITUTIONAL ARRANGEMENTS

### 2. Implications for Companies

- Start mine closure planning as early as possible
- Consult with communities throughout mine life
- Help community build capacity to manage itself
- Help facilitate government & NGO involvement
- Offer benefits that discourage dependency
- Avoid arrangements that create a culture of dependency

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Advance planning and close cooperation by the company with local authorities, communities and NGOs is a key to successful mine closure and achievement of post mine closure stability.

Successful environmental closure can greatly help the social sustainability of the community in the post closure period – especially for farming communities. It is inevitable that the company will provide services to employees or to communities, so the company should make a concerted effort to help build local capacity to take over those services during the operational phase, not just at mine closure.

An important question to consider for the company to consider who will be responsible to ensure the stability of any remaining de-commissioned assets (such as tailings impoundments) and who will operate any social or other infrastructure after closure when the mining company leaves.

During the operational life of this mine the company can help prepare other parties to fill the void when closure is completed and the company leaves.

## D. INSTITUTIONAL ARRANGEMENTS

### 3. Implications for Communities

- Develop self standing planning and leadership capacity
- Actively participate in regional planning process
- Take a long term view and invest mining benefits to build long term community assets that will help during post closure period

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Communities often become overly dependent on the mine to provide its needs. For example, as workers give up agriculture to work for the mine and as cash mine wages flow into a community, the result is that the community starts to “import” part of their food supply and their food security and self sufficiency is reduced.

Dependency is often increased because communities have often been "kept in the dark" about the mines activities and future and thus are not encouraged to plan for the future or better manage their own affairs.

Communities, with the help of the mine, local government and NGOs, can instead make efforts to plan for themselves – especially by having their representatives actively participate in the regional planning process. Most importantly they can make sure some of the mining benefits are used to build long term assets.

In some cases, artisanal and small scale miners wait for the mine to close so that they can take over the site for small mining. Such mining can be highly destructive. This happened at the Mount Victor mine in Papua New Guinea where much of the environmental protection undertaken at mine closure was subsequently undone by illegal miners. Such actions can be very difficult for regulators to prevent. But the local community can have a say in the matter and has a potentially very important role to play in protecting the environment after the the mine is closed.

## D. INSTITUTIONAL ARRANGEMENTS

### 4. Implications for NGOs

- Help local community build its own planning and self management capacity
- Help operate social assets and infrastructure where its fits with NGO capabilities and missions
- Remain engaged with the Government, company and community in long term regional planning work

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Many NGOs see their main role as monitoring the performance of mining operations. While this can be a useful role if done in a constructive manner, there is an equally if not more important role for NGOs to play in helping local communities to strengthen their planning and leadership capacities.

NGOs can help communities avoid reliance on hand outs and over dependency on mining for services and economic activities.

They can also play a very valuable role in helping to operate social assets and infrastructure if it fit with the capabilities and missions (e.g. church agencies) if Government does not have all of the needed capacity.

For example, NGOs are helping train local Government officials in Papua New Guinea, provide micro enterprise finance in Romania, undertake innovative rehabilitation programs in Niger and manage mining company initiated community projects in Indonesia. In this regard, mine-related Foundations (such as the Rio Tinto Foundation) may have a useful role to play both before and after mine closure.

## D. INSTITUTIONAL ARRANGEMENTS

### 5. Implications for World Bank and Donors

- Facilitate development of good practice mine closure principles and check list
- Support Government in designing effective regulatory and fiscal regimes and associated implementing capabilities
- Use convening power and neutral position to help different parties to work together
- Share and disseminate cross-country experience

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As indicated in previous side, the World Bank (as well as other donors) can help mine closure through lending, police advice, environmental and social guidelines and technical assistance to help design effective regulatory regimes and build the necessary institutional capacity to implement them.

The Banker donors can also support different stakeholders working together and can share and disseminate good practice and cross country experience.

## Conclusion

“Given the need for sustainability after mine production ceases, “closure” may no longer be the right word”

Ex Deputy Minister of Mines, October 2000

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Increasingly, mine closure will come to be seen not simply as the end of mining, but rather as one step in a larger process of environmental recovery for ecosystems and social renewal for communities that continues long after mining ceases