

**GOOD PRACTICE NOTE**

**PUBLIC INFRASTRUCTURE  
AND MINING**

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## **GLOSSARY OF TERMS**

**BOT** – Build-Operate-Transfer, a type of PPP in which private owners build an installation (often a power station), operate it with the public utility buying the output (power); and transfer it at the end of the contract to the public utility

**BRT** - Build-Rent-Transfer, a type of PPP

**BTO** – Build-Transfer-Operate, a type of PPP in which ownership is transferred to the Public Authority upon completion of construction of the facility

**CDD** - Community-Driven Development

**CONCESSION** – a type of PPP in which the CONCESSIONAIRE (the provider) is allowed to charge a service fee for the use of the infrastructure or service which the provider has built.

**DBB** – Design-Bid-Build, a typical public sector procurement approach for infrastructure development in which the Public Authority supplies the design, puts out tenders and other entity who wins the tender builds the infrastructure

**DBBO** - Design, Build, Finance and Operate, a type of PPP

**DBMF** - Design, Construct, Maintain and Finance, a type of PPP

**EPC CONTRACT** – Engineering, Procurement and Construction Contract whereby the contractor proves a complete installation (e.g. a power plant) to specification, at a fixed price and to a fixed schedule.

**FRANCHISE** – a type of PPP in which the FRANCHISEE (the service provider) is allowed to charge a service fee for the use of the infrastructure or service which has already been built. The FRANCHISE pays a lump sum or for the right to charge service fees

**ICT** – Information and Communication Technology

**Lease/Maintain** – a type of PPP

**MINING** - extraction of metals and minerals, including coal but excluding oil and gas, by means such as open pit mining, dredge mining, underground mining and quarrying

**MINING INFRASTRUCTURE** – The installations and facilities that are required for the development of mines such as roads, railways, energy, water, communication networks and housing. This infrastructure could be part of the larger scale networks and facilities that support the public as a whole.

OUTPUT SPECIFICATION – an alternative approach to DBB, in which the Public Authority specifies requirements in terms of “outputs” and another entity designs, finances and builds the infrastructure.

PFPP – Privately funded Projects

PPPs – Public-private sector partnerships. In the case of mining and infrastructure, mining revenues or income generate new sources of income for infrastructure, new infrastructure and/or new infrastructure related services

PPP Contract – between a public sector party and a private sector party

PSP – Private Sector Participation

PUBLIC INFRASTRUCTURE - large scale public facilities or systems that meet public needs and enable economic activity. It includes transportation networks and installations such as roads, railways, ports and harbours, airports; public utilities for the generation and distribution of water and energy, and waste disposal; and telecommunication networks. Social infrastructure is another sub-category of public infrastructure and includes schools, colleges, universities, clinics, hospitals, social housing and prisons. Public infrastructure is owned by government. Public infrastructure can be classified according to levels, e.g. the macro-level of infrastructure, the sector level such as the energy sector, industry level such as the energy generation sub-sector, and localised physical systems such as municipal energy distribution systems.

PUBLIC INFRASTRUCTURE ATTRIBUTES – large, essential, capital intensive with high initial investment requirements

PUBLIC INFRASTRUCTURE STAKEHOLDERS – include the levels of government or government authorities responsible for providing and delivery public infrastructure, owners of the infrastructure who may be public or private, operating entities, beneficiaries of the services, regulators and suppliers

RLT - Rehabilitate-Lease-Transfer, a type of PPP

ROT Rehabilitate-Operate-Transfer, a type of PPP

SUSTAINABLE DEVELOPMENT - for the purposes of this guidance note, is defined in terms of the “five capitals model”. In this model there are five capitals from which society derives the goods and services needed to improve quality of life, and natural capital is the ultimate source of all capital. When the stocks of natural, human and social capital are consumed faster than they are produced or replenished, a sustainability crisis develops. This model

allows the mining process to be directed towards sustainable development. For example, although mining depletes non-renewable natural capital, the process of mining can provide a platform to develop other types of capital such as social capital in the form of public infrastructure and the institutions for health and education. The risks in the mining process are associated with mining's impact on the stocks of natural resources including water, air and land<sup>1</sup> and these risks must be avoided or contained

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<sup>1</sup> See Forum for the Future for more detail discussion of this model (<http://www.forumforthefuture.org/projects/the-five-capitals>)

## 1. INTRODUCTION

Although mining depletes non-renewable natural capital, the process of mining can provide with careful stewardship of mining revenues and the prioritization of infrastructure development, the basis for developing other types of capital. For example, this could include social capital in the form of public infrastructure such as roads, power utilities, hospitals and schools. The environmental and social degradation that often accompanies mining, particularly at local level, can be mitigated through minerals policy and planning. This should come into effect early in the mining life-cycle and continue to be implemented over the full life-cycle. Moreover with judicious allocation of mining revenues significant infrastructural gains can be made in the immediate and regional locality of mines.

The term “public infrastructure” refers to large scale public utilities or systems, providing road and rail transportation, water, power, telecommunications, ports, pipelines, schools, colleges, universities, clinics and hospitals. Such infrastructure supports society broadly, and enables economic activity. It may encompass the basic installations and facilities that are required for the development of mines where such infrastructure is part of public infrastructure.

The objective of this note is to identify good practice in mining, which enables the development of public infrastructure alongside of mining activities. It focuses on the relationship between the infrastructure that is built to support mining and that which serves society. The note advocates that where infrastructure is to be developed for mining, it should contribute as far as possible to the development of public infrastructure at national, regional or community level. It outlines options for key stakeholders for leveraging the extraction of non-renewable resources for the establishment public infrastructure which is lasting and which improves prospects for sustainable development.

The note is limited to what is contained in reports available from the World Bank. Gaps in information include a lack of references dealing specifically with mining and infrastructure development and associated PPPs. The “good practice” identified is mainly in form of policy advice although there are a few examples in which such practice has been implemented successfully.

This good practice note should not be used prescriptively, as mining takes place in different settings, in which infrastructure needs, social priorities and provisions for governance vary. Good practice is described in principle and broad terms, although the case studies may contain examples of approaches which worked in particular situations.

The note flags issues which may be encountered by state policymakers and ministry officials in their dealings with mining companies as it is relevant to the state's strategic planning functions and budgeting processes. It can also be used by mining companies in their interaction with governments and communities, and by communities affected by mining.

## **2. PRE-REQUISITES FOR PUBLIC INFRASTRUCTURE DEVELOPMENT LINKED TO MINING**

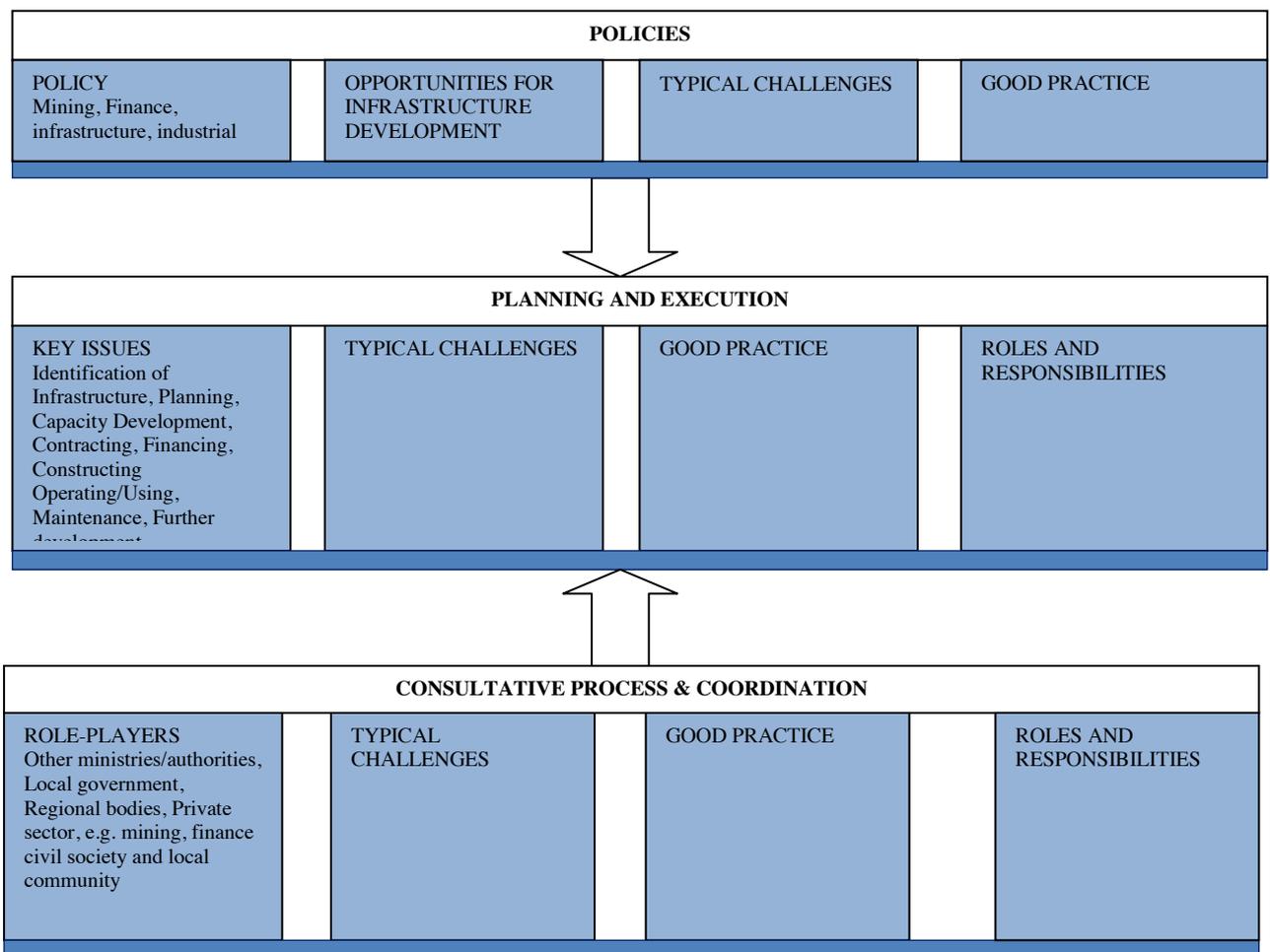
The following are prerequisites for ensuring that mining revenues are applied to public infrastructure development:

- ❖ Capacity for national and regional economic planning
- ❖ Capacity for local economic planning involving local stakeholders
- ❖ A clear and rigorous environmental and sustainable development policy
- ❖ Mining law
- ❖ Clear policy about mining's role in economic and social development
- ❖ Recognition by government of mineral resources as national assets
- ❖ Government commitment to using minerals extraction revenues to the public good
- ❖ Policy commitments to apply mining income to the development of public infrastructure
- ❖ Policy commitments to align the development of infrastructure associated with mining with the development of public infrastructure
- ❖ Security of tenure of mining licences, commensurate with the long timelines and significant commitments required for infrastructure development.
- ❖ Minimum requirements for benefits to local communities derived from standard mining infrastructure such as roads, water supply, energy and communication networks.

### 3. THE GOOD PRACTICE NOTE

#### 3.1 FRAMEWORK

The planning and development of public infrastructure is at the heart of this good practice note. Policies for linking mining to infrastructure development and consultative processes are the key input elements, as illustrated in Figure 1. Each of these issues is considered in terms of the typical challenges encountered and good practice.



**Figure 1: The framework for good practice in mining and infrastructure.**

## 3.2 POLICIES

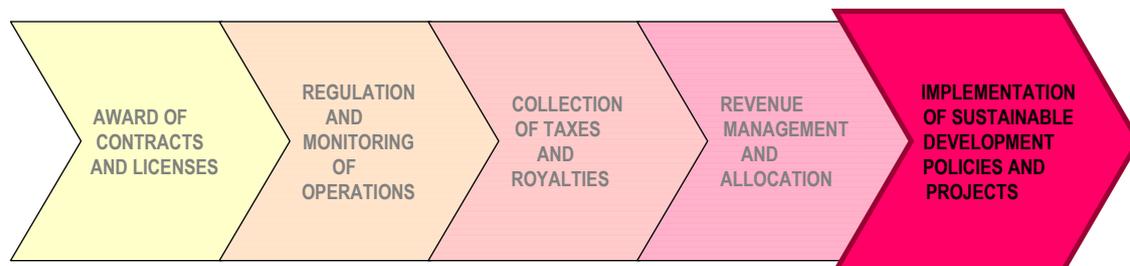
### Governance and infrastructure policy in the Democratic Republic of the Congo

The Democratic Republic of the Congo has a long history of conflict, corruption and a culture of rent seeking. Since the return to peace a new government was elected in 2006 under the leadership of President Joseph Kabila. The parliament of the DRC adopted a Governance Contract in February 2007 that sets out the measures the government will take “participation, transparency, responsibility, respect for the primacy of law, efficiency and equity.” The Governance Contract makes specific reference to the effective implementation of the Extractive Industries Transparency Initiative (EITI), in which DRC has participated since March 2005 (Andrews et al 2008). Most of the major mineral deposits occur inland where the long distances to ports, and inefficient (and largely badly deteriorated) road and railway infrastructure increases production cost significantly. This puts the DRC at a severe competitive disadvantage on the international market. Generation of power in Upper DRC is also an issue with old generating plants and lack capacity to produce sufficient power for the mining industry. Government plans to restructure or privatise the state railway and power companies; however the appropriate regulatory framework for the private ownership of heavy infrastructure is not yet in place.

### 3.2.1 Mining

#### Opportunities for Infrastructure development:-

In identifying the key mining policy issues that can enhance the opportunities for the development of infrastructure linked to mining one could consider them in terms of the different stages of the mining value chain (Figure 2).



**Figure 2: The Mining Value Chain (adapted from Alba 2009a)**

The mining value chain concentrates on translating non-renewable resources into other resources with a view to promoting sustainable development and long term growth (World Bank, 2009). The chain allows the user to maintain sight of sequence of the decision-making whilst focusing on the particular issue such as infrastructure development. The value chain infrastructure falls under the fifth segment, “Implementation of sustainable development projects and policies”.

Some opportunities associated with the value chain in respect of optimising infrastructure development linked to mining are summarised in the table below.

<b>Mining value chain segment</b>	<b>Some opportunities for infrastructure development</b>
Award of contracts and licenses	Including, as part of an overall strategic plan for sustainable development, the development, upgrading or maintenance of infrastructure as a one of the conditions of the contracts and licenses awarded
Regulation and monitoring of operations	Regulation and monitoring of the mining operations in a way that optimises infrastructure development and usage over the life of the project
Collection of taxes and royalties	Development of fiscal policies that optimise taxation levels and contributions to infrastructure development arising out of mining investments
Revenue management and allocation	Optimising infrastructure development from management and judicious allocation of revenue from mining, with policies which maximise revenue collection efficiency and allocation of funds to infrastructure that accords sustainable development
Implementation of sustainable development projects and policies in the development of mineral resources.	Locating mineral resource policy within a wider policy framework for sustainable development, and ensuring that projects associated with mining, including infrastructure development, are consistent with this policy.

### **Typical Challenges:**

Challenges associated with policies that relate to infrastructure linked to mining include the following:

- How to optimally use the high rents generated by large scale mining for infrastructure development
- How to ensure that infrastructure developed for mining projects will have sufficient demand to make it viable to establish infrastructural elements such as especially power, water and transport facilities
- How to make policies competitive for attracting enough for investment in mining while optimising the opportunities for infrastructure development
- How to ensure good governance in the management of mineral resources for infrastructure development
- How to ensure long term commitment and consistency of government
- How to ensure an enabling environment through clear and sound policies
- Dealing with depletion of mineral capital and ensuring that it is replaced by other forms of capital
- Lack of basic physical infrastructure

### **Good Practice:**

The following are some good policy practices:

- Transparent, non-discretionary and competitive processes should apply to the awarding of exploration and mining rights, especially where these rights are tied to infrastructural development
- Mining policy should ensure security of tenure to licensees. This is to enhance confidence to fully explore and extract mineral resources
- Policies should provide for the funding of infrastructure from royalty income, particularly in the communities affected by mining
- Mining policy should provide for closure planning prior to licensing. This should include provisions for decommissioning, the rehabilitation of the mine and mining area, and the handover of infrastructure to the community or government
- Policy should provide for the development of law governing mining and infrastructure, covering PPPs and other options for infrastructure development, such as incentives for mining companies to invest in infrastructure development

### **3.2.2 Other policies**

#### **Policies and Consultation, Good Practice example of Papua New Guinea**

Papua New Guinea has a set of environmental laws, and regulations that apply to all sectors. In addition specific environmental protection requirements and monitoring procedures are contained in project development agreements negotiated between the mining company and the government. A decision-making “forum” consisting of the project developer, impacted communities and government agencies is directly involved in the licensing and approval process. This results in a high degree of information disclosure and consultation between the developer and the people affected by the project (Weber-Fahr et al, 2002).

### **Good Practice:**

- Take account of non-renewable and volatile nature of extractive industry revenues
- Government retains responsibility for economic development with provision for mining companies’ contributions to infrastructure development
- Provide for public infrastructure investment decisions which capture “ the potential benefit of extractive industry expansion and favour the country’s economic diversification away from extractive industries”
- Provide for screening mechanisms for public investment projects using tools such as cost-benefit, cost effectiveness and implementation readiness analyses

- Government should acknowledge that since mining companies require a “social licence to operate”, an approach is advisable in which a portion of mining royalties is allocated to public infrastructure of direct benefit to local communities

### **3.3 PLANNING AND EXECUTION PRIORITIES**

#### **3.3.1 Identification of Infrastructure**

##### **Typical Challenges:**

The challenges associated with decisions about the identification of infrastructure needs include the following:

- How to develop a robust process for identifying infrastructure and ensure input from all relevant stakeholders
- How to balance national priorities versus local needs
- How to align the infrastructure needs of individual projects with national priorities
- How to prioritise infrastructure needs in the face of general and acute shortages of infrastructure
- The need to balance the infrastructure needs of the people and the requirements of industry
- How to ensure sustainability of infrastructure selected, taking cognizance of optimal use, long term viability and support of the livelihoods of communities

##### **Good Practice:**

Some of the good practices applied to identification of public infrastructure include:

- Clear legal frameworks and early planning from governments to ensure an orderly process
- Selecting infrastructure that addresses the needs of communities and mining companies and is adaptable to demand fluctuation that may result from volatile mining industry activity

- Identifying projects in which mining companies will contribute to the maintenance of infrastructure
- Identifying projects in which local communities are likely to be proactively involved
- Selecting infrastructure for which there is potential for local capacity to be developed to run and maintain it

### 3.3.2 Planning

#### Infrastructure planning, Good Practice example of Puquio Norte in Bolivia

Puquio Norte in Bolivia is an excellent example of infrastructural development for a mine which has been planned to also meet the needs of the community. The mining company combined funds with the local community to build a gas pipeline that was larger than necessary for the company's needs. The local rural population was then provided with electricity based on the extra capacity of the pipeline. (Remy and MacMahon, 2002),

#### Typical Challenges:

In planning the following challenges are often encountered:

- How to optimise the planning process with regards to contracting, financing, construction, operation and usage and maintenance
- How to ensure development of capacity to operate and maintain the infrastructure
- How to ensure viability of the infrastructure beyond mining
- How to decide on the role of government in infrastructure, e.g. a) not provide infrastructure, b) to provide infrastructure in return for an equity share equal to the value of the infrastructure or, c) to provide the infrastructure and charge for usage
- How to decide on the appropriate partnerships and linkages in the execution of the infrastructure projects e.g. PPPs
- What role to assign to the private sector (including mining companies) in the development of infrastructure, e.g. asking companies to develop infrastructure, and have optimum PSP or PFP arrangements
- How to assess the impacts of infrastructure development on the social and biophysical environment.
- How to deal with the unintended consequences of infrastructure development such as increased migration resulting in greater pressure on resources and impacts on the fabric of the local society
- How to optimise the positive impacts on regional economic development

- How to plan for competing needs in the use of infrastructure, particularly between mining companies and other users
- How to ensure that the infrastructure needs of a community are correctly identified
- How to select the appropriate vehicle for the development of public infrastructure

**Good Practice:**

The good practice in planning includes the following:

- Governments and mines should ensure that the appropriateness of the infrastructure is well researched, with all of the consequences clarified. Specifically it must enhance the lives of the local population, from which there must be open support for the development
- When developing supportive infrastructure for local communities it is important to ensure that there will be sustainability in the infrastructure throughout the mining phase and onwards beyond mine closure. The best method to build in this assurance of long term sustainability is to plan for it from the outset and build in long term management and funding
- Decommissioning and the rehabilitation provisions in mine closure plans should be integrated into public infrastructure development plans
- Mining and the development of infrastructure can have significant unforeseen socioeconomic impacts. Where this occurs it is incumbent on government and the mining company to plan for mitigation of the impacts
- Planning for infrastructure should consider the regional picture including the nature and specific nodes that the infrastructure should serve and clustering of activities for long term sustainability in economic development
- Community consultation processes in planning for infrastructure development should be rigorous and open, so that the infrastructure can lead to long term sustainability of the service and a better result for all.
- Mining companies should consider the full financial implications of public infrastructural development and maintenance and the final handover of public infrastructure at closure. This should be done in the feasibility stage of planning and before licensing to mine.
- The appropriate vehicle for development of the infrastructure should be determined by the size of the project, whether it will be long term and how the

finance will structured and who will design, build and operate the infrastructure. Options include PPPs and simple public procurement.

### **3.3.3 Capacity development**

#### **Typical Challenges:**

Infrastructure development linked to mining needs special capacities to be developed for all the stages of planning and execution. These are some of the challenges associated with this process:

- How to improve the overall weak legal systems and poorly functioning or non-existent institutions
- How to improve the availability of skills and human resources for infrastructure development
- How to deal with dysfunctional supervisory capacity in institutions and build capacity for the oversight of infrastructure development
- How to ensure strong and efficient institution and inadequate good governance standards throughout the system

#### **Good Practice:**

The following good practices apply to planning, implementation, monitoring and execution:

- The development of institutional capacity to monitor and enforce the laws and regulations, over the entire life cycle of the mine and that of the infrastructure
- Provide for public consultation. Involvement of local communities considerably increases the probability of finding a broadly acceptable solution to environmental and social issues and identifying appropriate infrastructure projects
- Early training for, and outsourcing of services to the community, including those services associated with infrastructure provision, provides livelihoods and improves the probability of continuing the service and infrastructural benefits to the community after mine closure.

### **3.3.4 Contracting**

#### **Typical Challenges:**

Some of the challenges associated with contracting include the following:

- How to minimise the use of discretionary power in procurement arrangements
- How to avoid monopolies
- The lack of independent bodies to oversee actions by public institutions
- How to ensure transparency and reduce corruption and fraud

#### **Good Practice:**

Some of the good practices applied to contracting include the following:

- Government should guard against the allocation of discretionary powers to government or political officials in the awarding of contracts
- Transparent public tendering processes, as part of policy for full disclosure and reporting of mining revenues and mineral resource management processes
- The contractual arrangements to be considered for public infrastructure development include “output specification”, DBB and EPC contract

### **3.3.5 Financing**

#### **Typical Challenges:**

The challenges associated with financing of infrastructure include the following:

- The general lack of funding for infrastructure development
- Planning for infrastructure development with mining revenues that have yet to be realised
- Agreeing to purpose built infrastructure for mining which does not also meet the needs of the (local) population
- How to account for and track quasi-fiscal arrangements in which mining companies provide infrastructure in lieu of taxation or royalty payments, so that a government

does not effectively and implicitly subsidize such infrastructural development to an extent through forgone tax revenues

- How to guard against burdensome hidden costs to government in arrangements that make infrastructure spending recoverable or tax deductible for resource companies
- Lack of planning for direct costs (for example recurrent upkeep costs) that become apparent when mining stops and the resource company moves on
- Risk of distorting public spending priorities, by attending to the oversized needs of infrastructure development and maintenance
- The risk of mining companies developing a sense propriety over the public infrastructure to which they have contributed, even if this contribution has been offset by the tax breaks/rebates received over time

### **Good Practice:**

These are some of the good practices in dealing with financing of public infrastructure related to mining:

- Mining fiscal regimes should be designed to make provision for incentives for public infrastructural development of the area as well as for mitigation of mine closure impacts.
- Where contractually fixed, quasi-fiscal development expenditure takes place by a mining company, it is essential that this is fully recorded in the budget, and that resulting commitments and costs to government are fully understood and recorded.
- Where mining companies build infrastructure and receive related taxation breaks the company should realize that the infrastructure has been partially (or fully) paid for by the lowering of taxation and the state is therefore a partial (or full) shareholder in the infrastructural development.
- The immediate fiscal value of high tax levels should be carefully balanced against the benefits obtainable from a well run mining industry which contributes to infrastructural development
- Lack of funding could be ameliorated through the formation of public-private partnerships (PPP's), especially with mining companies. Examples of PPP arrangements include BOT, BTO, BRT, RLT, ROT, DBBO, DBMF and lease/maintain partnerships
- Estimates of the cost of managing environmental impacts should be factored into financial considerations

- The expected socio-economic benefits of mining-related infrastructure development should be quantified

### **3.3.6 Operating and Usage**

#### **Typical Challenges:**

Some of the challenges linked to operation and usage of mining-related public infrastructure development include the following:

- Poor cost recovery in situations where mining may have initially been used to lock in the development of the infrastructure
- Under pricing of infrastructure usage and service. This is often the case where the contractual arrangements may have been initially justified to lock in a base load demand, but no adjustment was built into the plans for future growth in external demand.
- Local community dependence on infrastructure and services provided by the mining operation
- Lack of capacity to operate the infrastructure

#### **Good Practice**

Some good practices associated with operation and usage of public infrastructure that has been developed in association with mining includes the following:

- Governments should plan upfront for price adjustments after the initial lock in period
- Latecomers should pay competitive prices for infrastructural usage
- Pricing for infrastructural usage should be finalized before licensing
- Infrastructure benefits must be accessible to local communities
- Operation of infrastructure could be done by third party arrangements such as franchises and concessions

### **3.3.7 Maintenance**

#### **Typical Challenges:**

Some of the challenges associated with maintenance of public infrastructure developed in relation to mining include:

- Limited capacity, particularly skills to maintain infrastructure
- Lack of financial resources to maintain the infrastructure
- The lack of capacity and standards to monitor and regulate the impacts of mining use of public infrastructure
- Dependence on the mining operation for infrastructure maintenance
- Lack of planning for proper handover of infrastructure maintenance from the private sector to local authorities

#### **Good Practice:**

Some of the good practices in maintaining public infrastructure include:

- Capacity building of local communities to participate in servicing infrastructure
- Guidelines to monitor the condition of the infrastructure
- Provision of funding for maintenance activities

### **3.3.8 Further development**

#### **Typical Challenges:**

Some of the challenges associated with planning for further development linked to public infrastructure include the following:

- How to utilise some of the minerals produced in the country to foster the emergence of domestic manufacturing
- How to use mining and the infrastructure developed around it for diversification of the economy

- How to use mineral wealth as an opportunity to build competitively priced transport infrastructural services
- How to provide incentives for the development of beneficiation and value added businesses. This could lessen the requirement for large scale transport of ores and ease the burden on transport infrastructure

**Good Practice:**

Some of the good practices in fostering further development from the relationship between public infrastructure and mining include the following:

- Scaling up infrastructure using funding from the fiscus
- Planning for the domestic utilisation of minerals produced as inputs for local beneficiation and value adding industries, and providing the links to further infrastructure development
- Mineral resource corridors which entails a holistic approach to linking mineral potential to infrastructure development

### 3.4 CONSULTATIVE PROCESSES AND COORDINATION

**Consultation at Misima mine in Papua New Guinea**

Misima mine is an example where better consultation would have lead to a better result for all. A state-of-the-art hospital was built for the community; however the community needed basic health care facilities and simple improvements in water supply and sanitation. The company would probably have had less cost and a better long-term sustainability of the services if the community consultation process had been more rigorous and open minded (Sheldon et al, 2002)

**Consultation in the DRC**

Procedures for community consultation prior to issuance of a mining permit are established in the Mine Law of 2002 and accompanying regulations. Established good practice is for extensive and meaningful consultation to take place with the prior informed local community at the beginning of the exploration. Although many NGO's believe the practice should be for prior informed *consent* of the local communities, there is no firm international consensus on the issue. While the impacts on local communities of mining developments are recognized, there is virtually no open and meaningful dialogue with the local community. Good practice in community consultation recognizes consultation as a continuous process, to be conducted periodically, according to set procedures and mechanisms, with full disclosure of relevant information in a form comprehensible to the community members (Andrews et al 2008)

### **3.4.1 Key role-players**

The key stakeholders in the consultative processes and coordination of infrastructure development linked to mining include:

- Mining ministries and related authorities
- Other ministries and government authorities
- Local government
- Regional bodies
- Private sector including mining, finance and engineering firms
- Local communities and civil society organisations

#### **Typical challenges:**

Some of the challenges encountered in consultative processes and coordination include the following:

- How to deal with the fact that infrastructure development generally falls outside of the scope of mining ministries, and mining companies are generally not in the business of owning, building, and operating public infrastructure
- How to be inclusive in the process of identifying, planning, contracting, constructing, and operating infrastructure which will likely include other ministries, other companies and communities
- How to communicate to all stakeholders the 'big picture', in order to capture the full range of potential economic benefits
- How to plan and implement inter-ministerial cooperation. For example by clarifying the roles to be played by the mining ministry, and other ministries and government authorities in the development of infrastructure
- How to deal with lack of capacity and address dysfunctional aspects of governance
- How to structure local government development plans to ensure that government retains the responsibility for the supply of services and avoids overlaps
- How to ensure interconnectivity of infrastructure through a regional approach
- How to promote optimal regional development through clustering and densification
- How to ensure that mining environmental action plans are in harmony with the development of regional infrastructure and this is done in consultation with all stakeholders

- How to ensure a level playing field for all stakeholders in negotiations about mining-related infrastructure development
- How to facilitate a good consultation process which allows for the needs of the community to be given an equal footing
- How to develop capacity in local government and communities to manage social infrastructure beyond the life of mine.

### **Good Practice:**

Some examples of good practice include the following:

- Inter-ministerial coordination for the construction of good policy within all of the areas on which this can have an impact on infrastructural developments based on mining. This should result in policy alignment for mining, transport, water, ICT etc.
- New methodologies for the provision of infrastructure in underdeveloped regions such as PPPs and Community-Driven Development (CDDs)
- Tripartite design and implementation since the viability of mining projects is dependent on the degree to which the mining company, community and government can work together
- Prime responsibility for good governance rests with government, with communities, civil society and the private sector insisting on this
- Introducing communication platforms to ensure effective consultation and coordination
- Independent monitoring of mining company and government actions in regard to agreed development of public infrastructure would enhance accountability

### **3.4.2 Roles and responsibilities**

The consultation processes and coordination for mining-related public infrastructure development requires the different stakeholders to play their part in identification, planning, contracting, construction, operation and maintenance of the infrastructure. These are some of the roles that they could play:

- National or federal government including mining and other ministries and authorities:
  - Government ministries should be responsible for the development of the policies with a lead ministry identified

- Government should ensure that policies are in place that ensure that infrastructure development is aligned to national development priorities
- Government should coordinate and lead the infrastructure planning process even if it only means providing a policy framework and strategic direction linked to national imperatives
- Government should be responsible for providing the framework in which the financing, contracting and operation and maintenance of the infrastructure will take place
- Local authorities:
  - Local authorities should bring a local development perspective to the policy development process as well as to the planning and execution stages of infrastructure development. They will also work with local communities in capacity building initiatives for infrastructure operation and maintenance
- Regional bodies:
  - Regional bodies should work with governments to develop broader developmental strategies which provide for sustainable development
- Private sector including mining companies, engineering firms and finance institutions:
  - Private sector may provide input into the policy development process
  - Mining companies will participate in the identification of infrastructure to be developed, since they will be potential users of the infrastructure
  - In planning finance and engineering firms will play a key role in providing information that will be necessary for decision making
  - They may play a role in the actual provision of the infrastructure or provide resources directly or indirectly to the development of the infrastructure
  - Private sector companies including mining companies may influence the planning through timing and scheduling of the development of the infrastructure and may be potential partners in the development of the infrastructure
  - Engineering firms and finance institutions may be involved in the finance, construction, operation and maintenance of the infrastructure
- Local communities and civil society:
  - They may play a monitoring role in ensuring that the processes and procedures for contracting are fair and transparent
  - Communities will need to make known their infrastructure needs
  - They may play a role in monitoring the planning process and the related governance issues

- Civil society may ensure that government and industry and other decision-makers listen to the needs of the community and governance issues such as transparency and consultation are addressed

**CASE STUDIES AND KEY SOURCES – MINING AND INFRASTRUCTURE  
DEVELOPMENT**

## CASE STUDIES

### **Democratic Republic of Congo**

*World Bank Study: Growth with Governance in the Mining (2008, Report no 43402-ZR)*

*Infrastructure Aspects of the Study*

#### **POLICY ADVICE**

Mining

Develop policy for mineral assets to contribute to the overall development of the nation, provinces and communities affected by mining

Improve transparency and disclosure provisions in respect of

- The terms contracts for investments in infrastructure, made in return for access to mineral deposits
- Full disclosure of mining revenue flows

#### **PLANNING AND EXECUTION PRIORITIES**

Identification of infrastructure needs

- There is a general lack of infrastructure for transport, energy and power
- Invest in the rehabilitation and /or construction of transport and power infrastructure in mineral producing areas
- Link transportation networks
- Upgrade technology and equipment

Capacity Development

- Develop the regulatory framework and capacity for private ownership of heavy infrastructure
- Develop capacity to manage and maintain infrastructure

## **Extractive Industries Value Chain**

### *A Comprehensive Integrated Approach to Developing Countries*

*Extractive Industries (World Bank, Alba, 2009)*

*Infrastructure Aspects of the Working Paper*

#### **POLICY ADVICE**

Mining	<ul style="list-style-type: none"><li>• Provide for full discussion of public investment policies including programmes for community development in areas affected by extractive industries</li><li>• Provide for partnerships between government, industry and civil society in designing and implementing sustainable public investments</li><li>• Provide for securing of political consensus</li></ul>
Other Policies	<ul style="list-style-type: none"><li>• Take account of non-renewable and volatile nature of extractive industry revenues</li><li>• Government to retain responsibility for development policy with provision for mining companies to contribute infrastructure development</li><li>• Provide for public infrastructure investment decisions which capture “ the potential benefit of extractive industry expansion and favour the country’s economic diversification away from extractive industries”</li><li>• Provide for screening mechanisms for public investment projects using tools such as cost-benefit, cost effectiveness and implementation readiness analyses.</li></ul>

#### **PLANNING AND EXECUTION PRIORITIES**

Planning	Provide for mine closure and plan post-closure scenarios
Capacity Development	<ul style="list-style-type: none"><li>• Establish systems for budget execution, monitoring and feedback</li><li>• Strengthen government and non-government project implementation capacity</li><li>• Establish training and capacity building initiatives</li></ul>
Contracting	<ul style="list-style-type: none"><li>• Provide for transparent and non-discretionary procedures</li><li>• Separation of roles for areas where conflict may arise</li></ul>
Financing	<ul style="list-style-type: none"><li>• Include estimates of environmental impacts and expected socio-economic benefits</li><li>• Decisions on public policy and investment of mineral rents</li></ul>

#### **CONSULTATIVE PROCESSES AND COORDINATION**

Other ministries and government authorities	<ul style="list-style-type: none"><li>• Provide for co-ordination between government, regional authorities and mining companies in the design and implementation of projects</li><li>• Provide for consultation with local communities</li></ul>
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## Implications of Royalties for Investors, Civil Society, the Market and Government

*Mining Royalties – A Global Study of Their Impact on Investors, Government and Civil Society (World Bank 2006)*

*Infrastructure Aspects of the Study*

### **POLICY**

Mining

- Balance the depletion of national assets with accrual of benefits to the country/ citizenry as a whole
- Clarity and transparency over the use of mining revenues to the benefit of the public
- Clarify whether royalties go into the central fiscus or whether some or all of the royalties are to be set aside for affected communities (or other selected parties).
- Clarify how sustainable development is to be funded at the level of the affected community. For example, most countries in Asia and the Pacific, and some in Latin America and Africa, including South Africa follow the central fiscus approach. Funds are distributed from the fiscus to other tiers of government in terms of central budget priorities. Brazil, Mozambique and Indonesia provide for a portion of royalties to be paid to lower levels of government while Ghana and Nigeria have established a Minerals Development Fund. In South Africa, communities can also exercise preferential rights upon submission of a development plan to the Department of Mineral resources. Preferential rights permits communities to mine or prospect or lease these rights to mining companies.
- Balance the need to charge royalties with expectations that mining companies contribute to local (infrastructure) development.

Other Policies

Take into account that the notion that mining companies require a “social licence to operate” is consistent with an approach in which a portion of mining royalties is allocated to public infrastructure investments that are of direct benefit to local communities.

## **An Asset for Competitiveness: Sound Environmental Management In Mining Countries (2002)**

*Global Mining  
IFC, World Bank*

### **POLICY ADVICE**

Mining

- Policy interventions must take the realities of their specific context into account; models have been developed over many decades and had a different starting point
- Monitoring and enforcement procedures

### **PLANNING AND EXECUTION PRIORITIES**

Planning

- Establishing clear guidelines for operations
- Completing thorough action plans
- Preparing, jointly with relevant stakeholders, an initial plan and updating it on a regular basis during the life of the project

Capacity Development

- Providing the necessary resources to fully implement plan
- Availability of skills and human resources.
- Extensive use public consultation processes.
- Corporate initiatives and trilateral cooperation

### **CONSULTATIVE PROCESSES AND COORDINATION**

- Consulting with stakeholders at all phases of project
- Following procedures for identifying responsibility
- Clarifying and establishing – in partnership with communities and government agencies monitoring and supervision, as required
- Encouraging public participation
- Extensive use public consultation processes.
- Governments must provide strategic direction and the requisite legal, regulatory, and institutional frameworks
- Increasing the capacity of local communities to participate effectively during consultation and in monitoring operations.
- Partnerships are needed to successfully develop mining projects.

## Dynamic Mineral Resources management: Anosy Case Study (2006)

World Bank

Michael Stanley and DeVerle Harris

### POLICY ADVICE

Mining	<ul style="list-style-type: none"> <li>• Mineral resource corridors - holistic integration of mineral potential and infrastructure development</li> <li>• Sound understanding of the underlying resource and potential impacts and contributions of those resources across time</li> <li>• Need for infrastructure to link more remote regions to markets, social services, and security</li> <li>• approach is holistic in employing a landscape planning approach to consider the impacts of mining and infrastructure on the natural and socioeconomic systems</li> <li>• Potential sector contributions to national and regional accounts from government policies that support infrastructure and regional development.</li> <li>• Integration into regional economic development strategies</li> </ul>
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### PLANNING AND EXECUTION PRIORITIES

Identification of infrastructure needs	<ul style="list-style-type: none"> <li>• Mining development in a region typically requires large investment requirements relating to physical infrastructure (roads, rail, ports, power), which increases the overall cost of production</li> </ul>
Planning	<ul style="list-style-type: none"> <li>• Estimates of mineral resource potential based on alternative infrastructure development scenarios</li> <li>• Access to information on the quantity and quality of society's resources</li> <li>• Delicate balance of tradeoffs between alternative land-uses.</li> <li>• Financial valuation of deposits within a (i) regional infrastructure, and (ii) economic development context</li> <li>• Use of geographic information systems (GIS)</li> <li>• Potential impacts of infrastructure and mining activity</li> </ul>
Further development	<ul style="list-style-type: none"> <li>• Potential for development of medium to small enterprises, particularly for participating in infrastructure development</li> <li>• Identification of growth poles linked to the infrastructure</li> </ul>

### CONSULTATIVE PROCESSES AND COORDINATION

	<ul style="list-style-type: none"> <li>• Regional planning commissions</li> <li>• Full access to data and participation in the planning process for the various</li> </ul>
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## **Guide on Resource Revenue Transparency (2007)**

**IMF**

### **POLICY ADVICE**

Mining

- Provide for fiscal transparency
- Provide for a robust legal framework for granting rights and clarity in licensing procedures
- Provide for clear taxation framework
- Authority over resource revenues
- Clear distinction between commercial activities and policy and regulatory roles of government owned entities

### **PLANNING AND EXECUTION PRIORITIES**

Planning

- Clear roles and responsibilities

Contracting

- Contractual arrangements should be clear and transparent
- Limiting discretionary powers
- Open tendering with clearly defined procedures

Finance

- Revenues from mineral rents should be clearly indicated in the budget and published regularly
- Government expenditure e.g. on infrastructure should also be transparent and made public, and competitively done to get the best deal
- Equity participation by government should be fully disclosed

### **CONSULTATION PROCESS AND COORDINATION**

- Information to be publicly available
- Disclosure of all fiscal and quasi-fiscal arrangements
- Clarity in the roles and responsibilities of different levels of government

# Large Mines and Local Communities: Forging Partnerships, Building Sustainability

World Bank and IFC

2002

*Felix Remy and Gary MacMahon*

## **POLICY ADVICE**

Mining	<ul style="list-style-type: none"><li>• Government focus on regulatory role</li><li>• Importance of national legal and fiscal frameworks</li><li>• Sustainability and infrastructure provision</li><li>• Governance</li></ul>
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## **PLANNING AND EXECUTION PRIORITIES**

Identification of infrastructure needs	
Planning	<ul style="list-style-type: none"><li>• Analysis of impacts of development</li><li>• Plan for externalities and to mitigate unintended consequences</li></ul>
Capacity Development	<ul style="list-style-type: none"><li>• Training and employment of locals</li><li>• Technology transfer</li><li>• Empowerment of local government</li></ul>
Operation and maintenance	<ul style="list-style-type: none"><li>• Outsourcing</li></ul>
Further development	<ul style="list-style-type: none"><li>• Diversification of economies and livelihoods</li><li>• Community development processes</li></ul>

## **CONSULTATIVE PROCESSES AND COORDINATION**

	<ul style="list-style-type: none"><li>• Equalising the relationship between all stakeholders</li><li>• Strong trilateral dialogue</li><li>• Ensuring benefits to communities</li><li>• Transparency in all dealings</li><li>• Monitoring of public programs</li></ul>
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## LITERATURE SOURCES

LITERATURE EXTRACT	KEY ISSUES
<p>Foster (2008) points out that African countries, in particular low-middle income sub-Saharan countries, lag behind their peers in the developing world when it comes to infrastructure coverage, especially in the areas of power generation, paved roads and telephone mainlines. The importance of a <b><u>regional approach to ensure interconnectivity of infrastructure</u></b> is emphasized by Foster (2008). Importantly, however, it is not only the availability of infrastructure that is significant, but the efficiency in the use of that infrastructure.</p>	<p>Regional approach</p>
<p>The ease of obtaining international finance to support infrastructural developments may differ considerably dependent on investment type. Because of the inherent <b><u>security of the availability of the mineral capital as well as the high rents obtainable through mining, mining attracts development finance</u></b> relatively easily. This provides an <b><u>opportunity to associate mining with important infrastructural development and let the two run hand-in-hand</u></b>. Moreover, since water, transport and power infrastructure are all required for large scale mining it makes absolute good sense to make use of this relationship. This is widely recognized and it has been indicated that governments view the extractive industries as the only asset available for jump-starting their economies (Extractive industries Review (EIR), (2003)</p>	<p>Opportunity of high mineral rents attracting finance for infrastructure</p> <p>Linking mining and infrastructural development</p>
<p>In the report “Strategy for African Mining”, The World Bank (1992) indicated that besides perceived geological potential itself, it is <b><u>government policy</u></b> and the <b><u>quality of infrastructure that will determine the amount of exploration and mining development</u></b> in a country.</p>	<p>Infrastructure impacts mining development</p>
<p>Transparent, non-discretionary and competitive award of rights to explore or produce ensures a degree of protection against agency problems. For this reason the government must actively <b><u>build in a greater transparency in all dealings with business and civil society</u></b>. Notwithstanding this requirement of good policy in the awarding of licenses, (Alba 2009a) emphasizes the need that mineral policy should include clauses that require a certain minimum degree of technical and financial capability to carry out the exploration development and production. <b><u>Competitive bidding</u></b> will also give some protection against knowledge asymmetry (Schloss et al 2007). Discretionary powers of any form in dealing with mineral contracts and licenses should be protected against. Schloss and others (2007) call for a <b><u>reduction in discretionary powers particularly in procurement arrangements</u></b>, issuance of permits/licenses and in the avoidance of monopolies. They furthermore call for the <b><u>development of independent bodies to oversee actions by public institutions</u></b>.</p> <p><b><u>Clear rules and sound policies are required to ensure the adequate provision of infrastructure</u></b> around a new mining venture and to ensure good environmental, health and safety standards</p>	<p>Transparency in government dealings</p> <p>Limiting discretionary powers</p> <p>Competitive bidding for contracts</p> <p>Strong oversight bodies</p> <p>Clear policy frameworks and rules</p> <p>Role of government in infrastructure development in building, usage and running</p>

<p>(World Bank, 1992). In this 1992 paper, <b><u>governments were seen as having three alternatives for infrastructure provision, they are either to not provide infrastructure, to provide infrastructure in return for an equity share equal to the value of the infrastructure or to provide the infrastructure and charge for usage.</u></b> Most important is that the methodology should be decided early and transparently so that the mining company would know what it was dealing with and could factor that into the final decision on the feasibility of the prospect. Current methodology for the provision of infrastructure in undeveloped regions now often follows a different path with <b><u>Public Private Partnerships (PPPs) and Community-Driven Development (CDDs)</u></b> being amongst the most successful. No matter what methodology is used it is important that the overall risk involved in the mining operation is lowered to ensure that mining goes ahead.</p>	<p>Partnerships - PPPs and CDDs</p>
<p>There have been many successful instances of public-private partnerships between mining companies and governments or local authorities around the world. Andrews and others (2008) point to the development of rail and port infrastructure for coalmines in Queensland, Australia in the 1970s. The <b><u>development was funded by private companies and managed by them on behalf of the government.</u></b> Other partnerships have used dedicated mine infrastructure within the larger developmental context. An example of this is the development of port facilities in southern Madagascar linked to development of an ilmenite mine</p>	<p>Private sector participation</p>
<p>Better infrastructure is not always a simple matter in the desires of a community. <b><u>Infrastructure has a dual nature.</u></b> Firstly, once it is in place it requires upkeep and this requires financial resources that may not be available. Secondly the <b><u>infrastructure may have unintended consequences.</u></b> New roads for example may mean access to potential markets and social services for local people. They can also lead to increased immigration which may place greater pressure on the land, its resources and existing social and economic infrastructure (Remy and MacMahon, 2002). Thus the nature and <b><u>specific nodes that the infrastructure should serve</u></b> may be a point for careful negotiation and deliberation.</p>	<p>Dual nature to benefit both community and industry</p> <p>Impacts of infrastructure development</p> <p>Planning for development nodes linked to infrastructure</p>
<p>In their work on mining royalties Otto et al (2006) indicate that governments should pay careful attention to <b><u>immediate fiscal value of high tax levels, against the long-term benefits from a mining industry that may bring with it a sustainable level of infrastructure,</u></b> development, and economic diversification.</p>	<p>Balancing levels of taxation, attracting investment and long term benefits</p>
<p>Where <b><u>quasi-fiscal activity by a resource company to undertake social or environmental expenditure</u></b> without explicit government support is contractually fixed with companies, it should be indicated clearly with a full description in the budget documents. Although such resource company spending may be beneficial from a developmental point of view, it may result in direct costs for the government at a later stage once the deposit is mined out and the resource company moves on (for example there may at that point be a recurrent upkeep cost). Where this has previously not been</p>	<p>Planning for the budgetary impacts of quasi-fiscal activities</p> <p>Guarding against infrastructure hoarding by private sector developers</p>

<p>recorded in the budget it may distort overall public spending priorities (Bonilla, 2007). Moreover there may be a hidden cost burden to the government to the extent that spending for such programs is cost recoverable or tax deductible by resource companies. Bonilla (2007) points out that a <b><u>government may effectively and implicitly subsidize such infrastructural development to an extent through forgone tax revenues</u></b>. She gives an example of the “Infrastructure Tax Credit Scheme” for mining companies <b><u>in Papua New Guinea, where it was agreed that licensed mining companies would finance and implement development projects</u></b> (e.g., schools, health facilities, roads) up to a maximum of 0.75 % of the value of gross sales and receive in exchange an income tax credit.</p>	<p>Positive impacts of planned mining companies participation in for infrastructure development</p>
<p>One of the ways that mining companies and governments often agree to build infrastructure, is for the <b><u>mining company to put the infrastructure in place in exchange for some form of reduction in taxation</u></b> (see Otto et al 2006). When <b><u>mining companies put in the infrastructure there is a sense of ownership even if the fact that the tax perks received over time may well have paid in full for the development</u></b>.</p>	<p>Fiscal policy - Tax breaks for mining companies for infrastructure development</p>
<p>Political factors may also be playing a significant role here. Of particular interest in the analysis of Weber-Fahr (2002) is that China and India, both countries with significant mining sectors, use their minerals primarily for internal consumption and fare very well with China showing the highest GDP growth. The fundamental difference between these two economies and others in Weber-Fahr’s study is that <b><u>they use their coal for providing electricity and industrial development and their metals and minerals to support the emergence of substantial domestic manufacturing sectors</u></b>.</p>	<p>Emerging economies models on linkages between mining and infrastructure development and sustainable development and industrialization</p>
<p>The mining sector may result in as much as 30 % of fiscal revenues in some countries (Weber-Fahr, 2002). A good degree of this taxation may be in the form of royalty taxation that may (or may not) have been used to support the mining industry and local communities through <b><u>centred spending on infrastructure and development in the area</u></b>. <b><u>Mining has also directly contributed to a great deal of infrastructural and socio-economic development around the world</u></b>. Infrastructural spend directly by mines or in conjunction with governments ranges from rail to road, ports and dry ports to airports, hospitals, clinics and schools, provision of electricity, water and training.</p>	<p>Dual benefits of infrastructure development (industry and community)</p>
<p>Remy (2003) calls for the <b><u>community (“all stakeholders”), not only to participate in the supply of goods and services, but also to contribute to the planning of the infrastructure</u></b>. Whilst the essential infrastructure to promote the mineral development moves ahead speedily and with contractual integrity, a concomitant CDD approach adds onto the central infrastructural development in such a way that the overall development meets in full both the needs of the mining company as well as the needs in the community. Clearly any attempts at the <b><u>combined approach suggested here must be very well planned (taking full account of densification), and efficiently project-managed in its entirety, to ensure that the</u></b></p>	<p>Consultation of all stakeholders</p> <p>Planning for cluster economic activities development corridors</p>

<p><b><u>infrastructure forms a cohesive whole</u></b>. It is important to realize at every step of the process that the cluster of economic activities surrounding the mine generates most of the economic and social benefit to the local community and to the national economy, as well as defining the long term sustainability of the mining sector (Remy, 2003).</p>	
<p>Remy (2003) calls for the environmental management of the minerals sector to form an integral part of the wider national environmental management system with policies norms and procedures directed at sustainable development. This should, furthermore, lead to a <b><u>mining environmental action plan that includes the development of regional infrastructure in harmony with the rest of the plan and in consultation with all stakeholders</u></b>. Most developing countries have developed National Environmental Action Plans and have drafted legal frameworks and developed related institutional mechanisms. However human and financial resources for the drafting of practical regulations as well as implementation, monitoring and enforcement of these remain a challenge. A sectoral approach to regulations may be seen as a practical approach to begin with; however there is little doubt that in the longer term an integral approach to environmental regulation is preferable</p>	<p>Integrated planning of infrastructure for regional impact</p>
<p>Starke (2008) points out that there are often situations where simple changes early in the design phase can have profound implications for eventual site closure. Planning for closure should therefore begin at the mine design stage whilst there is still a lot of pliability in design options, especially in terms of infrastructural development. Design should constantly consider sustainability of the area after closure with the best interests of the local community in mind. Bond, in his forward to the paper by Sheldon et al (2002), concurs and indicates the <b><u>importance of a trilateral process of consultation in closure involving mining companies, governments, and communities</u></b>. He continues to emphasize that mine closure can allow the transfer of capital extracted through mining to future generations thus achieving a degree of sustainability. The knowledge is available to ensure that development opportunities are not missed but achieving the best results requires proactive directed action including:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b><u>Constructive early action from mining companies which will enhance the maintenance of infrastructural</u></b> and other forms of capital and protect the company's reputation.</li> <li><input type="checkbox"/> Proactive involvement of local communities to ensure sustainability of the benefits, and</li> <li><input type="checkbox"/> Clear legal frameworks and early planning from governments to ensure an orderly process</li> </ul>	<p>Balanced consultation giving communities, private sector and government equal footing</p> <p>Consultation to include participation in infrastructure maintenance</p>
<p>The obligation to ensure a reasonable level of <b><u>sustainable livelihoods after mine closure is paramount and it is clear that such sustainability is at least partially dependent on the provision of infrastructure</u></b> that could be used for other activities (Remy and MacMahon 2002). However, this is not a simple matter, <b><u>in many cases mining communities will have become dependent on the infrastructure provided by a mine</u></b>.</p>	<p>Planning for sustainable livelihoods and its link to infrastructure development</p>

<p>Sheldon and others (2002) indicate that in mining areas throughout the world mines owned much of the housing and many of the hospitals and schools before they were privatized. Furthermore, in <b><u>remote areas it is highly likely that roads and other transportation networks, telecommunication, and water and sanitation services were originally provided through a mining operation.</u></b> On mine closure, maintenance of such services ends and since governments and local authorities may not have the means to manage the services a simple handover is rarely successful, especially where the services are not independently financially viable. Remy and MacMahon (2002) make a clear case that <b><u>benefits must be sustainable and that outsourcing to the local community</u></b> is the key.</p>	<p>Long term sustainability of infrastructure developed around mining projects</p> <p>Benefits to communities and their participation in running the infrastructure</p>
<p>Substantive changes in the socioeconomic environment around new major mining ventures are the norm especially in deep rural situations and in third world countries. A clearly documented situation is that of Lihir Island, which lies approximately 900 km northeast of Port Moresby, in Papua New Guinea. Prior to the establishment of the Lihir Gold Mine in 1995, the island was relatively isolated from the rest of Papua New Guinea. It had limited infrastructure and schooling only by missionaries. There were a few roads and an airstrip. By 2002 the island has a major airport and a ring road built jointly by Lihir Management Company (a wholly owned subsidiary of Rio Tinto) and the government. A <b><u>school and health care services</u></b> was provided for the expatriate staff at Londolovit. During this period the Island's population almost doubled from 6,000 to 11,100 (mainly as a result of internal migration as Lihirians returning home to work in the mine (Salim, 2004). There have been (and there remains) considerable environmental and social issues around the mine. The mining company has been responsive to local pressures to provide jobs and to contract local business, and is active together with government on an ongoing basis to deal with issues. However, in the process there has been a <b><u>fundamental change to the fabric of the local society.</u></b></p>	<p>Mining company provision of social infrastructure</p> <p>Unintended consequences of infrastructure development</p>
<p>The DRC government signed <b><u>agreements with a group of Chinese enterprises in January 2008. These related to investments in infrastructure in return for access to mineral deposits.</u></b> The agreements pertain to financing of general infrastructure development in Congo in the amount of \$6 billion, in two tranches, in return for rights to exploit the Mashamba and Dikuluwe copper/cobalt and other mineral deposits through a new joint venture company – SICOMINES – to be created between the state-owned mining company, GÉCAMINES, and a group of Chinese companies. Andrews et al (2008) raise concerns, with regard to these agreements, the terms and conditions of which have not been fully disclosed. The agreements may include tax exemptions and incentives, (contrary to the provisions of the Mine Law of 2002). Furthermore, financial arrangements may involve government guarantees of non-concessional debt (violating agreements with the IMF and World Bank).</p>	<p>The challenges of new investment models from emerging economies, with regards to infrastructure development for access to mineral resources</p>

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## **APPENDIX**

### **METHODOLOGY**

This good practice note draws on a literature review of World Bank reports dealing with the minerals sector. As the source material is limited to information available from the World Bank, the note is not exhaustive of the literature on the subject of mining and infrastructure development. In the production of this note, 202 reports were reviewed. Twenty-four of these reports were particularly useful and are referenced in the bibliography. The reports were produced in the last 18 years, from 1992 to the present.

The literature review was directed at identifying information on how infrastructure development can be incorporated into mining policy, and how mining projects can be used as a catalyst for infrastructure development. The note includes information on the roles and responsibilities of the important role-players such as government, ministries, mining companies and communities. It flags issues which may be encountered by state policymakers and ministry officials in their dealings with mining companies, by mining companies in their interaction with governments and communities, and by communities affected by mining.

The content of the note is organised to show how mining policy and engagement process feed into the infrastructure development process.

Examples of successful implementation of good infrastructure related policies in low-income countries particularly, are cited in the note. Supplementary case study information is supplied in a separate section of the note.