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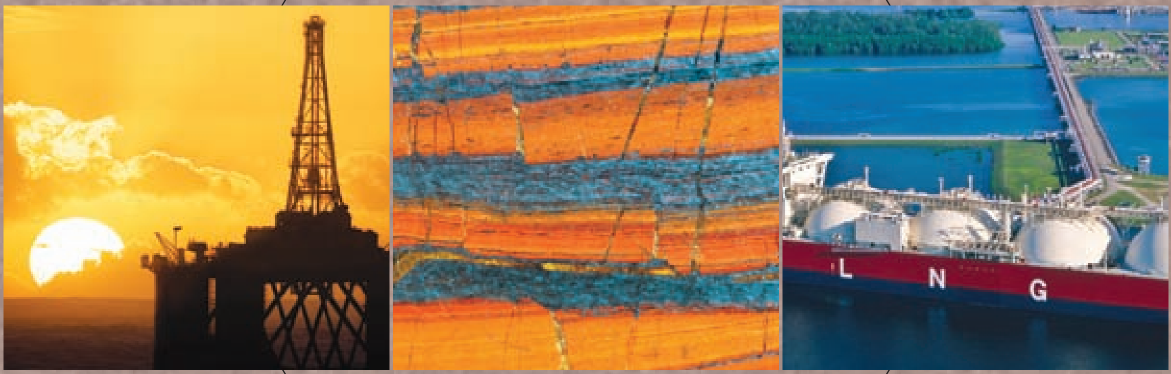
Extractive Industries for Development Series #19
October 2010

The World Bank's Evolutionary Approach to Mining Sector Reform



Gary McMahon

THE WORLD BANK

World Bank Group's Oil, Gas, and Mining Unit

Sustainable Development Network
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The Oil, Gas, and Mining Unit series publishes reviews and analyses of sector experience from around the world as well as new findings from analytical work. It places particular emphasis on how the experience and knowledge gained relates to developing country policy makers, communities affected by extractive industries, extractive industry enterprises, and civil society organizations. We hope to see this series inform a wide range of interested parties on the opportunities as well as the risks presented by the sector.

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Cover photos: Oil rig, hematite-banded ironstone, oil tanker

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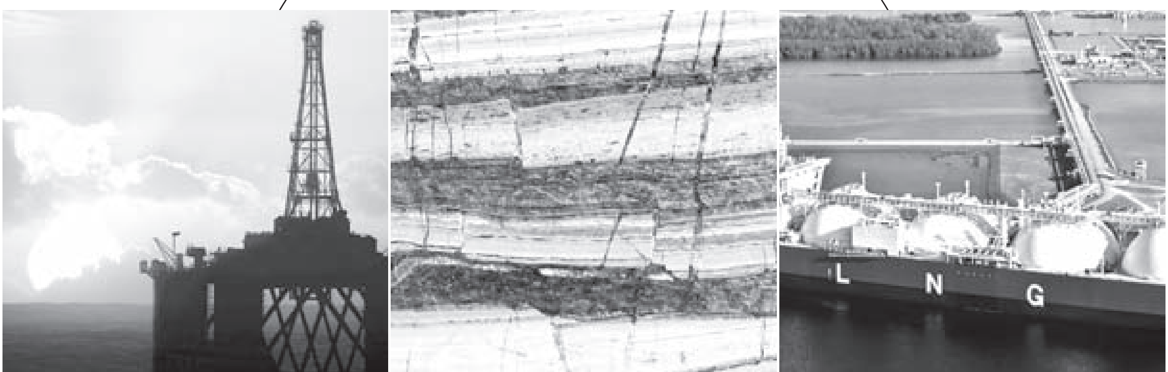

Gary McMahon

World Bank | Oil, Gas, and Mining Unit Working Paper

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Acronyms

EITI	Extractive Industries Transparency Initiative
GDP	Gross Domestic Product
HDI	Human Development Index
IMF	International Monetary Fund
SOE	State-owned Enterprise
TA	Technical Assistance

Acknowledgments

This paper began its life as a sector brief for the International Development Association (IDA) for which the content had to be greatly reduced. It expands beyond the World Bank's mining sector work in IDA countries to cover the development of the Bank's approach to the sector.

The author would like to thank the staff members of the Oil, Gas, and Mining Policy Unit for their helpful comments and provision of information. Clive Armstrong contributed the section on the Extractive Industries Review. A special thanks goes to Esther Petrilli-Massey who oversaw the production.

Executive Summary

Since the turn of the century, mining has become one of the most important economic activities in a growing number of low-income and middle-income countries. The increase in the sector's importance is partially due to the rise in mineral prices since the early 2000s but also due to the success of many major mining sector reforms in the late 1980s and 1990s. From the late 1960s to mid-1980s, larger mining properties were mostly nationalized throughout the developing world. At the end of the 1980s the trend reversed, partially due to a much bigger emphasis on private markets but also due to the poor performance of the state-owned enterprises. In response to the privatization of many existing mines and the desire to attract additional investment into mining sectors, the Bank was called upon to support the design of mining policies and laws that would make countries attractive destinations for private investment—at a time when mineral prices had been very low for nearly 20 years, and would remain so for another 15 years. In sum, the Bank has supported 35 mining sector reform projects of over $1 million—with total funding of more than $1 billion—in 24 countries in the 22 years following the initial assistance provided to Ghana (1988) and Bolivia (1989).

The World Bank's approach to mining sector reform has evolved substantially over the last 20 years as the priority issues have changed or increased in number, with each new step building on the past rather than replacing it. The evolution from an emphasis on increasing investment to promoting sustainable development is illustrated by the extractive industries value chain, where countries pass through five stages or links in the transformation of their mineral abundance: (i) the mineral legislation is sufficiently attractive to induce investment in the sector; (ii) the regulatory framework is clear and comprehensive and there is adequate capacity for monitoring and enforcement; (iii) collection of taxes and royalties is done in a transparent and efficient manner; (iv) governments are able and willing to manage and allocate fiscal revenues efficiently; and (v) the mineral sector is contributing to the sustainable socio-economic development of the country, whether as an engine of growth or a generator of large amounts of fiscal revenues. Success in this final stage signifies that the mining sector is having an important impact directly and indirectly on poverty reduction and broad-based, sustainable socio-economic development.

In this report, in addition to aggregate results, six brief case studies are used to highlight the impact of Bank-supported mining sector reform on various indicators at different links of the value chain. These include: the impacts on investment, production and employment in Argentina; institutional capacity building in Papua New Guinea; production and fiscal revenues in Tanzania; community and regional development in Madagascar; mining sector reform and sustainable development in Mongolia; and mining and resource corridors in Liberia.

The reforms of the 1990s and early 2000s, which focused on increasing investment and building regulatory capacity (links one and two of the value chain), have often had spectacular results with respect to investment and good results with respect to institution building. The work on increasing the efficiency and transparency of fiscal regimes (link 3) has also achieved significant success, although it is still too early to make a final assessment. While the mining sector-specific aspects of the management and allocation of fiscal revenues (link 4) are still in early days, there do seem to have been important impacts on poverty reduction and sustainable development (link 5) in a number of countries that have undergone mining reform, although there has been an insufficient passage of time to make definitive judgments.

The World Bank has played an important role in helping to rejuvenate the mining sector in many low- and middle-income countries around the world in the last two decades. The Bank's approach has not been static but has adapted quickly to an increasing number of priorities. Staff members from various parts of the Bank are actively involved in deepening the analysis of the mining sector's impacts at the micro, institutional, and macro levels—including the roles of foundations and community development agreements in furthering sustainable development around mining communities, increasing the capacity of local governments to manage increased mining revenues, governance and extractive industries, and the political economy of extractive industries. Work on the value chain, particularly managing fiscal revenues (link 4) and enhancing the contribution of the mining sector to sustainable development (link 5), continues throughout the Bank, both in operations and analytical studies.

The objective of all these efforts—including many others outside the Bank—is to strengthen each link in the value chain but even more so to strengthen the 'links across the links.' It has been a difficult, although mostly successful challenge to increase investment in mining in low-income, often conflict-torn countries. It has been even more difficult to increase the benefits to host countries and communities but significant and increasing success is being achieved in several dimensions. The outstanding challenge in mineral-rich countries is to leverage the various benefits the sector brings to achieve a sustainable development path that is on a much higher secular trend and broadly shared by the population.

Chapter 1

Introduction

While the mining sector has played an important role in many countries since the beginning of recorded history, its importance at the aggregate or macro level has likely never been higher than now. This is partially due to the rise in mineral prices since the early 2000s but also due to the success of many major mining sector reforms in the late 1980s and 1990s. Many countries now view the mining sector as a possible engine of sustainable development or, at least, one of the sectoral leaders. These countries no longer want mining developments to take place in an enclave fashion, but they want to increase the number of linkages to other economic opportunities, either directly or through a better integration of associated infrastructure with the rest of the economy. They also want a larger share of the rents generated by the sector, particularly when mineral prices are high.

For over 20 years the World Bank has been instrumental in providing technical assistance (TA) to countries in Latin America, Africa, and Eastern Europe, East Asia and the Pacific, and Central Asia to help reform mining sectors. In the early years of Bank assistance for mining sector reform, the emphasis was on increasing private investment and related economic indicators such as export earnings and tax revenues. However, by the mid-1990s, the need to improve the environmental performance of the sector became an essential part of the reform effort. Since the turn of the new century, and in an increasing manner, community and regional development issues have entered into the dialogue and assistance, including the impacts on women and other frequently disadvantaged groups. Finally, the role of the mining sector as an engine of growth, either through its direct participation in the economy or through the fiscal revenues it generates, has become an important aspect of Bank assistance.

Ample evidence exists that countries which adopt modern mining legislation and offer attractive enabling environments can attract private sector investment in mining exploration and production. This, in turn, provides tax revenues, export earnings, employment opportunities, infrastructure development in rural areas, and transfer of technology to the host countries. However, while the exploitation of mineral resources provides developing countries with considerable prospects for economic development, there is always the danger that it results in a socio-economic enclave. There are also often trade-offs with respect to the environment and the surrounding communities. Moreover, there is concern that large fiscal revenues being generated by mining can have negative impacts on governance and lead to a type of 'resource curse.' Countries, communities, and companies face tough questions about opportunities and risks as they develop steps to ensure responsible approaches toward mineral resource development.

The next section describes the evolution of the approach followed by the World Bank toward mining sector reform as new issues arose and expectations of the sector increased. This is followed by a presentation of the results of these reform efforts from their immediate impacts on mining investment to the ultimate objectives of reducing poverty and contributing to sustainable development in a country. In this section, six country case studies are used to highlight the progress made at various junctures of mining sector reform. The last section contains some final observations and next steps.[1]

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[1]Coal is not included in this study as it is an energy mineral and is treated differently in World Bank lending.

Chapter 2

An Evolutionary Approach

The approach of the World Bank to mining sector reform—primarily undertaken by what is now the Oil, Gas, and Mining Policy Unit—has evolved substantially over the last two decades as the most important issues have changed or (mostly) increased in number, with each new step building on the past rather than replacing it.[2] The evolution from an emphasis on increasing investment to promoting sustainable development is illustrated by the extractive industries (EI) value chain, where countries pass through five stages or links in the transformation of their mineral abundance (see figure 1): (i) the mineral legislation—including the award of contracts and licenses and tax regime—is sufficiently attractive to induce investment in the sector; (ii) the mining regulatory framework is clear and comprehensive and there is adequate capacity for monitoring and enforcement of technical, social and environmental performance; (iii) once production is underway, the collection of taxes and royalties is done in a transparent and efficient manner with the state receiving a 'fair share;' (iv) when governments receive these funds, they are able and willing to manage and allocate fiscal revenues efficiently, including to sub-national levels of government; and (v) the mineral sector is contributing to the sustainable socio-economic development of the country. In some countries the emphasis of the final link is on the mining sector itself as the engine of growth—creating jobs directly in the mines, creating jobs and new firms indirectly through the purchase of goods and services, and building new infrastructure (often with government participation) that can be used by other industries. In other countries the proper management and deployment of the sector's fiscal revenues are the main factors driving sustainable development.[3]

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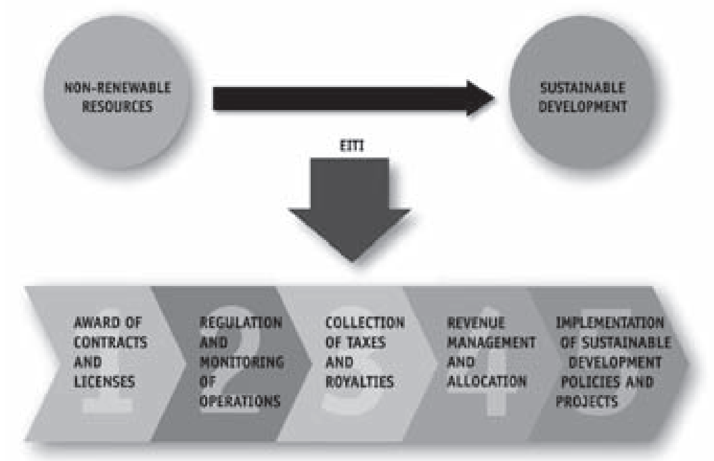
[2]The focus of this history is medium and large scale mining. While the World Bank has been actively involved in the artisanal and small scale mining sectors, most notably via the Communities and Small-Scale Mining (CASM) initiative (see www.artisanalmining.org), the issues are usually very different.

[3]For a thorough exposition of the extractive industries value chain, see Mayorga Alba, Eleodoro (2009), *Extractive Industries Value Chain*, Extractive Industries for Development Series #3, World Bank, Washington, D.C.

Figure 1: The Extractive Industries Value Chain



Each of the above developments went through a period when it was an 'emerging issue,' for which the consequences were not fully thought out or on which there was no consensus on how to respond. This issue normally arose due to circumstances external to the Bank, such as changes in industry trends or country reactions (described in more detail below) that forced staff to adapt their previous interventions in the sector. Eventually, the need to include a response to the issue was mainstreamed in the Bank's support (see Table 1) as policy responses matched global best practices.

Until the mid-1980s, Bank participation in the sector was mostly limited to loans to governments to develop their state-owned mines or affiliated infrastructure. From the late 1960s to mid-1980s, larger mining properties were mostly nationalized throughout the developing world. Participation of private mining companies was primarily limited to minority holdings and non-equity arrangements with state-owned enterprises (SOEs). At the end of the 1980s, the trend reversed, partially due to a much bigger emphasis on private markets but also due to the weak performance of the SOEs resulting from poor management, lack of reinvestment and the typical governance challenges often associated with SOEs.

In response to the privatization of many existing mines and the desire to attract additional private investment into their mining sectors, the Bank was called upon to support the design of mining policies and laws that would make countries attractive destinations for private investment—at a time when mineral prices had been very low for nearly

Table 1: Value Chain and Chronology of World Bank Support to Mining Sector

Link	#1 Award of Contracts & Licenses (Legal Frameworks)	#2 Regulation and Monitoring of Operations	#3 Collection of Taxes and Royalties	#4 Revenue Distribution & Management	#5 Implementation of Sustainable Development Policies & Projects
Emerging Issue	1985–7	1991–94: Institutional capacity 1991–94: Environment 1995–2001: Social & cultural	1987–94: Mining sector fiscal regimes 2005–6: EITI, transparency 2008–10: Political economy	2005–10: More focus from sector perspective 2007–10: Decentralization of revenues, earmarking	2001–05: Local community development 2005–07: Engine of growth/ integrated development 2008–10: Local/regional governance
Year when issue became mainstreamed in Bank mining sector work	1988	1995: Institutional capacity 1995: Environment 2002: Social & cultural	1995: Fiscal regimes 2007: EITI	From a macroeconomic perspective, revenue distribution and management have always been an essential part of work done by other parts of Bank and IMF	2006: Local community development 2008: Engine of growth/ integrated development

20 years (and would remain so for another 15 years). Soon mining law reform became the bread and butter of Bank support for the sector with 35 such projects of over $1 million—with total funding of more than $1 billion—in 24 countries in the 22 years following the initial assistance provided to Ghana (1988) and Bolivia (1989).[4] Almost two-thirds of these projects have been in Sub-Saharan Africa (21), with most of the rest in Latin America (6), and East Asia and the Pacific (5). While the design and complexity of mineral sector projects changed enormously

[4]The average mining TA project funding of $34 million masks a wide variance, ranging from $1 million (Solomon Islands, 2011) to $200 million (Mexico, 1991). Annex 1 contains a list of all Bank supported projects since 1988 with a significant mining sector reform component.

over the years, the reform of mining laws and regulations—which often but not always included a fiscal regime specific to the sector—has usually been the first step, recognizing that the other challenges only arise if there is investment in the sector.

When mineral laws were reformed, it was always necessary to reform or design the accompanying regulations. It was soon apparent, however, that most client countries lacked the institutional capacity to monitor and enforce these regulations and undertake other functions common to mining ministries. Consequently, many Bank-supported reforms included hands-on institutional capacity development with respect to the licensing regime, geological survey, engineering design, health and safety, and environmental performance. By 1995 all these functions had become mainstreamed in Bank projects, as had the design of fiscal regimes for the mineral sector. At this time the social and cultural impacts of mine developments also became more prominent.

Global trends and changing public opinion drove social and cultural issues. Of particular importance were the new sensibilities attached to the rights of indigenous peoples—on whose lands an increasing percentage of new mining operations were located—and affected local communities in general. However, this is at best half the story that actually began in the 1970s when the industry—driven by the need to reduce costs and be able to exploit increasingly marginal deposits—introduced technological changes that resulted in strong improvements in mining productivity and also moved increasingly to open pit operations. Most observers at the time, as well as most governments, did not notice that the mining industry had been transformed into a very technologically complex sector over the course of the 20th century. These factors meant that a mining operation employed considerably fewer people than previously, reducing the benefits communities received from mining. Accordingly, in order to obtain a 'social license' to operate, mining companies had to provide other benefits to local communities, such as schools, hospitals, educational programs, sports facilities, and at times transport and power infrastructure.

By the early 2000s, community development issues, including resettlement and the treatment of indigenous peoples and other disadvantaged groups, were mainstreamed in Bank mining projects. A few years later these issues evolved from some type of fair compensation to programs and projects that would lead to sustainable long-term development of affected communities, even after mine closure.

While the design of fiscal regimes for the mining sector had long been a concern in Bank-supported mining projects, in 2003 they moved to center stage for two quite different reasons. First, for the first time in three decades there was a large, sustained increase in mineral prices (which still continues in 2010) and, hence, potential fiscal revenues. Mining fiscal regimes developed in the past (often under Bank guidance) were not adequate to capture much of the large increase in rents generated by these price increases, which caused great concern in the host countries, reforms to fiscal regimes and even contract renegotiations. In mineral-rich countries, there is an ongoing debate as to the most adequate fiscal system and the parts of the Bank concerned with macroeconomic matters and the International Monetary Fund (IMF) are playing a much larger role in the sector than previously.

Second, corrupt practices as a major inhibitor of long-term development were receiving greater scrutiny by the global community, including the Bank. The amounts and final destination of the large fiscal revenues being generated by mining and oil were of particular concern in many low-income countries. The increase in actual and potential revenues has led to concern that a booming mining sector could lead to the so-called natural resource curse, fueling corruption and leading to the neglect of other sectors of the economy in a generalized scramble to get part of the sector's rents. As a partial response, by 2007, the Extractive Industries Transparency Initiative (EITI), discussed further below, was mainstreamed in all countries receiving Bank assistance for mining sector reform.

While revenue management and allocation has long been a traditional activity of Bank support, the rise in fiscal revenues potentially generated from the mining sector and related industries has led to more emphasis on the fourth link of the value chain from a sector perspective. In particular, host communities and regions have increasingly been demanding a greater share of mining sector revenues, although in many cases sub-national governments lack the capacity to use these revenues. Even formerly taboo subjects such as earmarking revenues to specific purposes are being discussed. Presently, decentralization and targeting of mining sector fiscal revenues is still an emerging issue, and it will likely remain so until a consensus is reached on the best approach.

In the end, the true, albeit difficult to measure, test of the mining sector's contribution is whether or not it leads to sustainable that is long-term, environmentally and socially sound development. This can be evaluated from two different perspectives: host communities or national/regional development. The first question is whether a mining operation leads to the development of human and institutional capacities in its host community so that the local area will continue to thrive when the operation is inevitably closed. The second question is whether a mining operation or, more usually, a number of mining operations in a region of a country lead to an integrated development platform with shared infrastructure, a mining sector industrial cluster, and subsequently the development of other industrial activities or clusters. In the extreme, this happens at the national level and the mining sector becomes an engine of growth for the country as a whole. An alternative version of this second perspective is that the fiscal revenues generated by the sector are very large and transformed into other forms of capital that are used as a springboard for socio-economic growth in the country. Clearly, both alternatives can occur simultaneously.

Chapter 3

The Results of Mining Sector Reform

The reforms of the 1990s and early 2000s, which focused on increasing investment and building regulatory capacity (links 1 and 2 of the value chain), have often had spectacular results with respect to investment and good results with respect to institution building. In the 2000s, the focus expanded, as described above, to include transparency, revenue management, and sustainable development from both the community and national perspectives. While the further one moves down the value chain, the more difficult it is to attribute results solely to mining sector reform, work on increasing the efficiency and transparency of fiscal regimes (link 3) has also achieved significant success, although it is still too early to make a final assessment. Although the mining sector-specific aspects of the management and allocation of fiscal revenues (link 4) are still in their early days, there do seem to have been some important impacts on sustainable development (link 5) in a number of countries that have undergone mining reform, although there are both problems of attribution and an insufficient passage of time to make definitive judgments.

Mining Reform and Investment

The impact on mining investment in selected countries undertaking mining sector reform with World Bank support can be seen in Table 2.

Given the relatively small size of the mining technical assistance loans—generally between $10 million to $50 million—they have had a phenomenal return when their impact is measured by the increase in investment. While the impact on other variables is discussed further below, none has likely been as dramatic as Argentina, a country which, other than construction materials, had no mining industry to speak of at the turn of the century. As described in Box 1, the impacts on investment, production, employment and exports have all been enormous.

Table 2: Mining Sector Reform and Investment

Country	Year Reform Completed	Amount of Mining Investment	Comments
Argentina	1995	2008: $2.4 billion; cumulative increase from 2003–08 was 1014%	Based on ongoing developments, investment expected to double again by 2015
Liberia	Still ongoing; began in 2006	Approximately $7 billion of investment agreements have been signed	Potential to reach $10 billion of total investment by 2015
Madagascar	2005	Approximately $5.5 billion of investment agreements were signed for 2 projects in 2005 and 2006	Both have links with the Bank work, but differently: QMM ($1 billion) benefited from a loan from the Bank to build a port Ambatovy ($4.5 billion) benefited from support to a revised law on large-scale investment
Mauritania	2003 (approx)	2003–08: $500 million in total (Mining output was $1.1 billion in 2008)	Mining investment was $13.5 million in 2001 and $11 million in 2002
Mongolia	1997	2003–09: $335 million per year on average	Oyu Tolgoi mine just approved, entails $4 billion of investment by itself from 2010–13
Mozambique	2006	2008: $804 million	Only $24 million in 2002; $2–3 billion investment in coal expected in the next 3–4 years
Papua New Guinea	2003 (approx)	2004–09: approx $1 billion in total; exploration investment rose from $10 million in 1999 to $84 million in 2009	3 new large scale and 2 new medium scale mines expected by 2015.
Tanzania	2000	2001–08: Averaged over $250 million per year	From 1990–99, investment was less than $10 million per year

Box 1: Argentina Mining Sector Reform and Investment, Production and Employment

In the mid-1990s, when the World Bank began its support of mining TA to the Government of Argentina, mining activities in the country were mostly limited to quarrying. Mining investment was $56 million in 1995, but by 2008, 13 years after a complete reform of the mining sector began, investment was $2.4 billion. From 2003–2008, the cumulative increases of the following key variables were: investment, 1014 percent; exports, 275 percent—$4.1 billion in 2008; production, 292 percent; employment, 259 percent—256,000 jobs in 2008 not including multiplier impacts; and exploration, 907 percent. Based on ongoing developments, it is projected that investment, exports, and production will at least double by 2015 and employment will increase by 50 percent.

In 1993, a Bank Mining Sector Review of Argentina showed that mining activities, at less than 0.5 percent of gross domestic product (GDP) and 1 percent of exports in 1991, were far below the country's potential. While Argentina had large areas of favorable geology for the discovery of mineral deposits, the potential of the country was largely unknown due to the paucity of geological data, deficient information infrastructure, and little exploration activity. The policy and legal frameworks were obsolete, dating back to the 19th century, and coordination between the 23 provinces (who own the mineral resources) and the federal government was non-existent. While there was some positive response to the report's recommendations, it was quickly ascertained that more in-depth technical assistance would be necessary, which led to mining TA loans in 1995 (PASMA I, $30 million) and 1998 (PASMA II, $40 million).

Given that mineral rights are provincially held in Argentina, it was essential to work with sub-national governments. The main objectives of PASMA I and II were very similar, with the former focusing on 6 provinces and the latter on the remaining 17. These objectives were to: (i) revise and modernize the mining legal and regulatory frameworks at the federal and provincial levels; (ii) support institutional capacity development and training at both levels; (iii) develop a modern cadastre and registry systems with harmonization across provinces; (iv) set up an environmental protection system for mining activities, including training as well as effective environmental legal and regulatory frameworks; and (v) define appropriate methodologies

(continued)

Box 1: Argentina Mining Sector Reform and Investment, Production and Employment *(continued)*

for baseline studies and undertake them in priority areas. PASMA II also included components on training and institution strengthening in assessment of socio-economic impacts of mining investments and in mining information systems.

While the efforts to increase the benefits of mining activities have been quite successful, with every job in a mine resulting in almost four jobs in companies providing goods and services to the industry, there are concerns that environmental and social management of the sector does not consistently meet international standards, and several provinces are discussing bans on open pit mining. Part of the problem is the lack of understanding by most political authorities of the causes and consequences of environmental and (to some extent) social impacts of mining as well as a lack of political will to address them. Nevertheless, there is now a strong trend for companies to enter into agreements with their host provinces with respect to substantial social funds (on average, about 1 percent of gross sales) that will be primarily used for infrastructure works in the region of the mine.

Mining Reform and Institutional Capacity

At an early stage of Bank involvement in mining sector reform, a strong emphasis was placed on the capacity of public mining institutions to monitor and enforce regulations as well as promote the sector. While at first the emphasis was on the licensing regime (including the cadastre) and the geological survey, environmental aspects of mining were quickly included and by the early 2000s, social impacts were mainstreamed, in part as a response to the Extractive Industries Review completed in 2004 (see Box 2 for more information). Bank TA on mining institutional capacity places a heavy emphasis on 'hands-on' assistance. The TA often includes a number of external experts based in the country to provide the required immediate assistance and train their national counterparts over the medium term. At the same time, efforts are made in most countries to increase the amount of training available at polytechnics and universities to ensure a steady stream of qualified individuals to work in the industry.

Box 2: Extractive Industries Review (EIR) – Implementing Reforms, Achieving Sustainability

In 2004, the World Bank Group (WBG) concluded a major review of its activities and its approach to the extractive industries. The review consisted of a number of parts that became collectively known as the Extractive Industries Review. The World Bank Group's independent evaluation units conducted an evaluation of the outcomes of past WBG programs and projects in EI. The International Finance Corporation's (IFC) Compliance and Ombudsman's Office (CAO) conducted a parallel review of how sustainability issues had been addressed in recent IFC EI projects. And, in addition, an independent, global consultation with stakeholders was led by an "Eminent Person", Dr. Emil Salim—an economist and former Minister of Indonesia—that produced an extensive stakeholder report summarizing views and providing recommendations going forward.

The Bank Group's Management responded to the three reports and their recommendations with a series of reforms and refinement to its approach in EI to better ensure that projects contribute to development (Management Response to the Extractive Industries Review - MR). The approach set out in the MR for WBG engagement in EI continues to guide the WBG. In general, the new approach gives greater focus to assessing and working to ensure the ultimate sustainability of the development impacts of EI in WBG member countries. Examples of the new approach include: extractive industry investment projects now require full disclosure of revenues; projects' development impacts are tracked more thoroughly; and a WBG EI advisory group was established to help ensure WBG remained engaged with stakeholders going forward. Reports of the meetings of the Advisory Group are made public. The MR also influenced the WBG approach more widely. A revision of the World Bank's Indigenous Peoples policy was approved in 2006 that reflected some of the key approaches adopted by the MR such as its requirement for "broad community support" for all EI projects supported by the WBG. IFC updated its environmental and social performance standards in 2006 and some of the key recommendations of the MR were adopted in its policy.

Each year beginning in 2006, staff report to the WBG Board on the implementation of the MR and these reports are accessible to the public on the WBG web site.

In most cases, Bank TA has had strong success in building up the institutional capacity of the relevant mining institutions to perform their licensing, cadastral, and geological survey duties. Progress has been slower on the ability of these institutions to monitor and enforce their environmental and social responsibilities due to difficulties in building up and financing the required human capacity. Perhaps the biggest challenge facing mining sector institutions is what could be called the 'catch 22 of mining sector reform.' That is, if the reform is successful at attracting investment, the public institutions cannot hire more staff or even keep their own people due to the large demand from much higher paying private companies. As wages are tied to civil service salaries, it is very difficult to make them more competitive. Both Mali and Papua New Guinea (see Box 3), recipients of Bank TA for mining sector reform, have earmarked part of the revenues paid by the mining companies to the responsible sector institutions and have also overcome civil service restrictions on salaries through the creation of independent legal entities. Accordingly, they have been able to build up relatively much more capacity than in other countries.

Box 3: Papua New Guinea Mining Sector Reform and Institutional Capacity for Monitoring and Enforcement

After the development of the Bougainville copper deposit in the late 1960s, Papua New Guinea (PNG) benefited from an active mineral exploration and mining industry. Although four more world class mines opened in the next 25 years, there was a significant decline in investor interest in the early 1990s due to a lack of confidence in sector policies (growing resource nationalism and institutionalized state equity requirements) and the ability of the Government of PNG (GoPNG) to manage the sector. The closure in 1990 of the Bougainville copper mine over disputes concerning community benefits greatly increased the political risk of operating in PNG.[5] As a result, investment in exploration fell from $83.2 million in 1988 to $10 million in 1999 and the pipeline of new projects dwindled apart from the Lihir Gold project, which commenced operations in 1997.

In 2000, the Bank began a TA project in order to help the GoPNG to (i) revitalize the sector through modernizing the mining law, regulations,

(continued)

[5]In one sense the Bougainville islanders were the leaders of the modern revolt of communities against mining operations when they perceived that they were receiving all of the social and environmental costs but little of the economic benefits. Since that time, PNG has been a world leader in the development of local community rights and benefits as well as processes for resolving conflicts in the areas of mining operations.

Box 3: Papua New Guinea Mining Sector Reform and Institutional Capacity for Monitoring and Enforcement *(continued)*

tax provisions, and geological data; (ii) increase the sector's contribution to community development, including through revisions to a draft standard mining contract; and (iii) increase the institutional and human capacity for social, environmental, and fiscal monitoring and enforcement. In addition, shortly after the project began, a 'women in mining' sub-component was also added when it became apparent that sustainable development of the mining sector would be impossible without the full participation of women.

The impacts of the reforms on the mining sector have been significant with respect to exploration and exploitation. Exploration investment increased from $10 million in 1999 to $84 million in 2009, and three new mining developments were approved with a combined capital value of $1.2 billion. In 2006, mining accounted for 58 percent of exports and between 2 percent and 30 percent of fiscal revenues. By 2010 new medium- and large-scale mines were operating, and by 2015, it is expected that there will be two additional large mines in operation, one medium-scale mine, one major upgrade, and the world's first large-scale deep seabed mine. In addition, there has been a large improvement in the capacity of the Internal Revenue Commission, which recovered nearly $25 million in its first two field audits of mining companies.

In 2006 a new statutory authority, the Mineral Resource Authority (MRA), was established to administer the mining sector. The MRA raises its own funding from sector levies and fees and is not subject to funding shortages or staffing restrictions like the former Department of Mining. A new agency was created to maintain the regulatory framework, the Department of Mineral Policy and Geohazard, and its institutional capacity has been built up substantially.

With respect to sustainable development, much more attention is being paid to community benefits and a significant number of spin-off businesses and joint ventures between local and foreign companies have developed as a result of new arrangements in the memorandums of agreements between mining companies and their host communities. The most dramatic change has been in the area of women and mining, where, with support of the GoPNG and mining companies, Women in Mining Action Plans and gender desks were set up for each large mine. These in turn feed into the National Action Plan for Women in Mining. Women in mining areas are now much more well-informed, have obtained a voice, and are capable of establishing and managing community development programs. In two of the most important mining areas—Ok Tedi and Lihir—women were very involved in the renegotiation of community benefits in the memorandums of agreement.

A second Bank mining TA project began in 2008, which includes components on the implementation of the action plan for Women in Mining, the participatory preparation of local community development plans, and support to the GoPNG to finalize its broader Sustainable Development Policy, which will feed into all future community benefits agreements.

Fiscal Regimes and Transparency

Up until the last five years, most Bank work on mining fiscal regimes focused on a country's mining law reform and was part of a package aimed at increasing investment in the sector. Accordingly, the regimes emphasized simplicity, stability, and relatively low rates to offset the years of uncertainty and political risk. As noted above, a rethink of the mining fiscal regimes is currently underway and a consensus is yet to be reached, which is not surprising given the large increase in the stakes if prices over the last seven years reflect a long-term trend. In Box 4 the Tanzanian experience is outlined.

The biggest change in the Bank's approach to fiscal management of the mining sector has been the move to encourage all of the countries receiving mining TA from the Bank to adopt the Extractive Industries Transparency Initiative (EITI) standards. The overall objective of the EITI is to increase transparency in governance by carefully monitoring and publicizing the flow of revenues between extractive industries firms and recipient governments. It is a process entered into voluntarily, in which the government of an 'EITI candidate' country publishes all the revenues it receives from mining companies and the companies publish all the revenues they pay to the government. An independent administrator reconciles the two accounts to make sure the money paid in matches the money received. The process is monitored by a multi-stakeholder committee, consisting of government, private company, and civil society representatives, which is responsible for disclosure and dissemination of the reconciliation report. The Bank, with the support of a multi-donor trust fund, has supported 29 mineral-rich (non-oil) countries trying to join EITI either as part of sector TA or through stand-alone assistance (see Table 3).

Most countries in the second column of Table 3 are close to compliance, and it is expected that there will be about 10 EITI compliant countries by the spring of 2011. Experience has shown that in addition to its primary purpose of increasing transparency, the EITI process has been very successful in mobilizing civil society on all aspects of extractive industries in countries where there had previously been little information or understanding. In particular, it makes stakeholders aware of how much (or how little) fiscal revenue is being paid by the mining companies and, indirectly, how many (or few) benefits they are receiving. The objectives of the EITI recently received a large boost when, in July 2010, the United States signed legislation requiring energy and mining companies registered with the U.S. Securities and Exchange Commission to disclose how much they pay to foreign countries and the U.S. government for oil, gas, and minerals.

Table 3: EITI Status of Mineral Rich or Dependent Countries*

EITI Compliant	EITI Candidate: published 1 or more EITI reports	EITI Candidate: working toward 1st EITI report
Azerbaijan-oil & gas Ghana, Liberia, Mongolia, Timor Leste-oil	Cameroon, Central African Republic, Cote d'Ivoire, Democratic Republic of Congo, Republic of Congo, Guinea, Kazakhstan, Kyrgyz Republic, Madagascar, Mali, Mauritania, Niger, Peru, Sierra Leone	Afghanistan, Burkina Faso, Chad, Indonesia, Iraq, Mozambique, Tanzania, Togo, Yemen, Zambia

*As of October 2010

Box 4: Tanzania Mining Sector Reform and Fiscal Revenues

Prior to independence in 1961, mining played an important role in Tanzania's development. Its share of GDP was as high as 10 percent in the 1950s and, with agriculture, provided the bulk of government tax and foreign exchange revenues. In the 1960s, the mineral industry was nationalized and most foreign investors left, with a state-owned company, STAMICO, taking over the remaining mines in 1972. Over the next 20 years, production declined in these mines and all of STAMICO's new ventures were unviable. By 1992 industrial mining only employed about 3,000 people and had total exports of $8 million. The only prosperous sub-sector was artisanal mining of gold and gemstones, where employment was at least 100,000 miners and exports were between $50 and $100 million per year.

Mining sector reform in Tanzania was part of a large but gradual adjustment program that began in 1986 with the objective of moving the country from a control economy to one led by the private sector. The first important step for mining was the 1990 National Investment Promotion Policy, which, among other things, removed the requirement for government equity

(continued)

Box 4: Tanzania Mining Sector Reform and Fiscal Revenues
(continued)

participation in mining ventures. A Mining Sector Review undertaken by the Government of Tanzania (GoT) with Bank assistance in 1990 led to a Mining Sector Policy Framework in 1994. Its key areas of reform were: reforming mining laws; overhauling the regulatory framework; instituting a fiscal regime that would encourage exploration and exploitation of minerals; formulating environmental policies, standards, and monitoring arrangements for large-scale and artisanal mining; divesting the state-owned mining companies; and strengthening the institutional and human capacity of the Mineral Resources Department. In 1994 the Mining Sector TA Project was launched in order to help the GoT fulfill these goals.

By 2004, four years after the project ended, gold production was 1.4 million ounces and total mining export revenues were $674 million. Six large industrial mines were in production or construction and there were over 3,000 large-scale prospecting licenses. Private investment in mining from 2001 to 2008 averaged over $250 million per year. In 2007, the mining sector's contribution to gross domestic product (GDP) was 3.5 percent (versus 1.5 percent in 2000) and export revenues were over $1 billion. Direct employment in the formal mining sector was 13,000 in 2007. Direct tax revenues from the mining sector were about 4 percent of total fiscal revenues in 2007 and are projected to be about 7 percent by 2017 ($284 million). Finally, from 2000 to 2007, the Human Development Index for Tanzania improved from .458 (compared to an average sub-Saharan Africa (SSA) of .471) to .530 (average SSA .514).

Currently, the main concerns about mining in Tanzania are: (i) it is not generating enough fiscal revenues at the national level or enough benefits to local communities; and (ii) there is inadequate institutional capacity to monitor and enforce mining regulations and laws, particularly with respect to the environment. In May 2009, the Bank and GoT entered into a new TA project for $50 million with the objective to strengthen capacity in managing the mineral sector to improve the socio-economic impacts of large and small-scale mining and enhance private investment. The GoT has recently passed a new mining law that increases the rate of royalty paid on minerals from 3 to 4 percent and allows for the participation of the government in all future mining projects. These provisions are projected to double fiscal revenues from the sector. The GoT is also actively pursuing candidate status for the EITI.

Long-term Growth and Sustainable Development

The mining sector, if sufficiently large, can have a strong impact on long-run sustainable development of a country by: (i) using the fiscal revenues generated by the natural capital to produce other forms of capital, or by (ii) being a leading sector or engine of growth through the spin-off firms and industries it creates and the opportunities opened up by non-dedicated infrastructure and other externalities. At the same time, it is important to account for the concerns of the communities located in the areas of mines or they will often sabotage mining operations if they perceive that they are not receiving their fair share. In recent years, the emphasis has been changed from 'fair share' to initiatives that will enable sustainable development for the communities, particularly after mine closure. This is a relatively new area of focus for Bank TA in the mining sector but it is receiving a great deal of attention. The most difficult challenge may be how to effectively build up the (eventually) necessary local governance in a country with generally weak sub-national governance. Box 5 describes the ongoing multi-faceted approach being taken in Madagascar to enable the host communities and regions of large mining developments to benefit from their operations.

Mining sector reform has had a large impact on fiscal revenues and economic growth in many countries, but whether these will lead to a higher growth path and sustainable development is still an open question given the historically recent nature of the reforms and the difficulty in untangling the impacts of the reforms from the higher prices in recent years. In columns 3 and 4 of Table 4, economic growth rates of mining-rich/dependent reformers in the 1990s are compared with growth rates of the 2000s, while columns 5 and 6 do the same for the Human Development Index (HDI). Average growth rates are up nearly 6 percent for mining sector reform countries (5 percent if weighted by population) versus 1.1 percent for the world as a whole. Similarly, the HDI has risen 0.69 points (17 percent) for the 12 countries for which there is data before and after mining sector reform. These figures suggest that countries are benefiting in a sustainable way from their mining sectors.

Box 5: Madagascar Mining Sector Reform and Community/ Regional Development

In 1998, with Bank support, the Government of Madagascar (GoM) began mining sector reforms that eventually led to a large increase in activity, including the development of large mining operations in ilmenite and nickel/ cobalt as well as several other strong possibilities. Given the widespread poverty in the country, the GoM realized that sustainable development of mining could not be undertaken without a decentralized administration and a deep involvement of affected communities. Its strategy, which is being implemented with Bank support, calls for: (i) building the capacity of the local and regional mining administration; (ii) increasing fiscal revenues to the communes, including the decentralization of tax collection; and (iii) defining effective ways and means for community empowerment and participation, including establishing public/private partnerships with responsible mining companies willing to invest part of their profits in human resources capacity building, and social and physical infrastructure. A key element of this strategy is the provision of technical assistance to community associations and municipal governments for the integration of mineral resources management in their participatory development plans.[6]

In short, mining companies and communities and regions must work together to integrate their respective development plans. In order to move responsibility to lower levels of government and increase the capacity of local populations to benefit from the opportunities afforded by the mining developments, a number of initiatives were undertaken, including: (i) training nationals to work, as employees or suppliers, in the mining industry in both the short term and long term; (ii) establishing programs to increase the capacity of local governments to manage fiscal resources; (iii) promoting community participation in decision making for regional and local development—including land use planning and biodiversity—and budgeting; and (iv) ensuring that infrastructure built to support the mining operations is integrated as much as possible with regional development plans, using public/private partnerships if necessary.

(continued)

[6]In light of the political upheavals in Madagascar since March 2009, continued Bank support in mining is dependent on maintaining a consistent long-term strategy for the sector.

Box 5: Madagascar Mining Sector Reform and Community/ Regional Development *(continued)*

While there is still much to be done, particularly with respect to capacity building of local governments, important progress has been made: 12,000 domestic jobs were created during construction of the two mines, and 5,000 full time jobs are expected at the two operations during exploitation. The ilmenite mine opened in 2009 and the nickel/cobalt mine is expected to open in early 2011. Mine forestry committees have been established to assist with biodiversity and land use planning. Both mining companies have provided extensive short-term training and some long-term training for workers in the mine. Both have taken very proactive stances in enabling local small and medium enterprises (SMEs) to take advantage of business opportunities arising from the requirements of the mining operations during construction and exploitation. With Bank-guaranteed finance, a new multi-use port has been built near the ilmenite operation, while the nickel/cobalt operation has done a major port upgrade. Both operations are providing power to their local areas. Finally, a foundation was proposed in connection with the ilmenite mine that would provide local communities with a source of income far beyond mine closure.

It is also worth noting that a sub-project of the Bank-supported project addressed poverty from a very different direction, providing assistance to the development of the Gemological Institute of Madagascar (GIM: www.igm.mg). The GIM, which opened in 2004, has been very successful in increasing employment, value added, and contribution to fiscal revenues in Madagascar of its large gemstone sector. With roughly 500,000 part-time and full-time artisanal miners in the country, there is great scope for the downstream gemstone industry to flourish. Students at GIM are trained in different aspects of gemology—including training of trainers—both to increase the value received for the gems and reduce the percentage of stones that leave the country in a rough state, estimated at 97 percent in 2001. The institute provides the skills that are needed to increase domestic value added, including cutting, valuation, and marketing. Training is offered at different levels, even one-day courses on gemology in remote villages. In 2005, the first regional cutting school was opened in Antsirabe. In 2007, a jewelry making school was opened, further enhancing the development of forward linkages. Many graduates of GIM now run their own businesses or work for one of the foreign-owned gem-cutting factories that have opened in Madagascar. It is estimated that 95 percent of the gems produced by weight now leave the country legally.

Table 4: Mining Reform Countries: Growth Rates and Human Development Index—1990s vs. 2000s

Country	Mineral export revenues (% of total exports of goods, 2000–7)	GDP Annual Growth Rate, 1989–1998	GDP Annual Growth Rate, 1999–2008	HDI, 1995 (or closest year)	HDI, 2008
Burkina Faso*	NA	4.4	5.4	.297	.389
Congo, Democratic Republic of	54.0	–5.9	3.2	.353 (2000)	.389
Ghana	34.5	4.3	5.2	.495 (2000)	.526
Guinea	85.6	4.2	3.2	NA	.435
Kyrgyz Republic	31.8	–6.4	4.4	.687 (2000)	.710
Liberia	51.9	–14.3	7.0 (2005–8)	.280	.442
Mali*	NA	3.3	5.5	.267	.371
Mauritania	51.6	2.5	4.6	.495 (2000)	.520
Mongolia*	53.3	–0.9	6.6	.676 (2000)	.727
Mozambique*	NA	4.7	7.7	.310	.402
Niger*	NA	1.5	3.7	.258 (2000)	.340
Sierra Leone	64.1	–4.2	9.9	NA	.365
Tanzania*	NA	2.8	6.5	.425	.530
Zambia	66.2	–0.1	4.9	.454	.481
Average (Unweighted)		–0.3 (w/o Liberia: 0.8)	5.6 (w/o Liberia: 5.5)	.416	.473 .485 w/o Guinea & SL
Average (Weighted by population)		0.1 (w/o Liberia: 0.3) (w/o DRC: 2.2)	5.1 (w/o Liberia: 5.1) (w/o DRC: 5.8)	.360	.44 .42 w/o Guinea & SL
Global Average		2.0	3.1		

*New mineral-dependent country in 2000s
Source: IMF (column 2), World Development Indicators (columns 3 & 4), Human Development Report (columns 5 & 6)

Mongolia is an interesting case, having become one of the world's most mineral rich and dependent economies in the last seven years. Fiscal revenues from the sector are already over 30 percent of total government revenues and are projected to be close to 75 percent by 2019. Given the small population of the country, this is an unprecedented opportunity to build up its human and physical capital and move toward a much more robust path of sustainable development. Box 6 describes some current efforts to meet this goal.

Box 6: Mongolia Mining Sector Reform and Sustainable Development

Important components of the Bank's initial projects in Mongolia to aid its transition to a market-oriented system in the early 1990s were the stabilization of the Erdernet copper exporter, rehabilitating the Baganuur coal mine—the only source of heating for Ulaanbaatar at the time—and reforming mining sector policy. In 1997 the latter resulted in a modern mining law that soon led to large increases in mineral exploration as well as exploitation of deposits discovered earlier during the socialist era with support from Russian geologists. The mining sector has been the leading sector behind gross domestic product (GDP) growth of 7.8 percent per year from 2000–08. From 2003–09, the mining sector accounted for about 60 percent of private investment, which averaged $335m/yr, equivalent to 10 percent of GDP. The sector also produced between 30 and 40 percent of government revenues from 2005–09. In 2009 mining directly accounted for about 22 percent of GDP, 70 percent of exports, and 30.6 percent of government revenue. In the first three months of 2010, mineral exports rose sharply again and accounted for over 90 percent of total exports.

Exploration has also been very successful with important discoveries of copper, gold, coal, zinc, and uranium, the most prominent of which are the world class Oyu Tolgoi copper/gold and Tavan Tolgoi coal deposits in the South Gobi desert. An agreement has been reached with Ivanhoe Mines (Canada) and Rio Tinto (United Kingdom) to develop Oyu Tolgoi, and construction of the mine and ancillary facilities is about to begin. Total investment will be $4 billion over 3½ years; the Government of Mongolia will hold 34 percent of the ownership. It is projected that at its peak in 2019, this mine alone will provide 55 percent of Mongolia's fiscal revenues and 20 percent of GDP.

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Box 6: Mongolia Mining Sector Reform and Sustainable Development *(continued)*

Finally, it should be noted that the sector's impact on economic growth has led to success where it really counts the most, poverty reduction. Consumption-based headcount poverty fell from 61.1 percent in 2003 to 35.2 percent in 2008, while from 2000–08, under-5 infant mortality fell from 6.3 to 3.4 percent and life expectancy rose from 64 to 67 years.

The Bank support to Mongolia is now focused on helping it use mining-generated resources for sustainable development. On the sector side, there have been two TA projects (2004 and ongoing since 2008) to support institution building in Mongolia's mining sector. A new, more transparent cadastre system is on-line and Mongolia is well on its way to becoming EITI compliant. Technical assistance continues to build up the sector's regulatory capacity, particularly on environmental and social issues. Other sector work focuses on education, financial markets, and environmental protection. With respect to institutions, there are projects on public investment planning and a country infrastructure diagnostic. On the macroeconomic side, a major challenge confronting the country is managing the large fluctuations in fiscal revenues that follow the mining price cycles. The Bank is currently preparing a project to support the Government of Mongolia in establishing a stabilization fund similar to the one used in Chile.

Mining is the only sizable industry for many countries that have undertaken mining sector reform in the last two decades and have successfully attracted large amounts of investment. Hence, it is valued as much for its ability to directly kick start industrialization as for its fiscal revenues. This is particularly the case for base metals like copper and iron ore that demand large amounts of infrastructure that can be used for other purposes, including the development of firms that provide goods and services to the mining industry. Liberia is one of the best examples of a country that is trying to use the mining sector (mainly iron ore) to develop resource corridors around which services and other industries can flourish. Moreover, the infrastructure could connect to Guinea and possibly other countries in the region such as Sierra Leone and Cote d'Ivoire. Box 7 describes Liberia's mining sector reforms and resource corridors.

Box 7: Liberia Mining Sector Reform and Resource Corridors

When the first civil war broke out in Liberia in 1989, the mining sector contributed about 25 percent of exports and the country ranked as the world's fifth largest iron ore producer. By the end of the second civil war in 2003, the mines and the infrastructure on which the country heavily depended were devastated. When President Sirleaf took power in 2006, it was not surprising that mining became the centerpiece of the country's recovery program, given its potetial and the need to revitalize both industry and infrastructure. Nevertheless, it was not only the mines and infrastructure that needed to be revitalized but the outdated legal and regulatory framework and the decapitalized sector institutions.

Given the interest of other donors in contributing to the rebuilding of Liberia—the United States in particular—the Bank's approach to TA in the Liberian mining sector has been different than in other countries. For the most part, the Bank has played an advisory role, explaining what needs to be done and providing guidance to the Government of Liberia (GoL), rather than being involved in the rebuilding of the regulatory and institutional frameworks. The 'heavy' lifting has mostly been done by USAID with significant roles played by the IMF in fiscal reform of the mining sector and United Nations Development Plan (UNDP) in the artisanal mining sector.

Two striking aspects of mining TA in Liberia have been how well the various players, including the GoL and other groups in the Bank, have cooperated and how much has been accomplished in such a short time with respect to both outputs (such as draft minerals policy and regulations, cadastre system, EITI validation, model development agreement) and impacts (such as investment in world class mines). With support from the Bank, Liberia became the second country in the world to be EITI validated. A large known property, the Bong iron ore mine, was successfully auctioned off to China Union for $2.6 billion, including a $40 million signature fee along with a commitment to reconditioning Monrovia's port and providing sufficient hydropower for the mine and the city. The investment is expected to create 3,000 to 4,000 jobs directly and 15,000 indirectly. ArcelorMittal is undertaking a $1.5 billion investment in the western part of the country with significant infrastructure rehabilitation and construction. In February 2010 Elenilto (Israel) won a Western Cluster iron bid, with expected investment of

(continued)

Box 7: Liberia Mining Sector Reform and Resource Corridors
(continued)

$2.4 billion and $3.1 million per year for community development. All these contracts were done with the assistance of various partners, including UNDP, the Soros Foundation and Revenue Watch.

The Bank's current involvement in Liberia's mining sector is focused on moving along the value chain. The Bank is improving the ability of the GoL to negotiate with powerful actors on the opposite side of the table as well as assisting in ongoing negotiations, particularly concerning bids. The funding is coming from a new financing window in the Bank, the Extractive Industries Technical Advisory Facility (EI-TAF); the GoL is the first client to use this window.

In some ways, all of the above is just the beginning. With assistance from USAID, the GoL has recently produced Liberia's 'Vision for Accelerated Growth—Development Corridors,' in which three of the five proposed growth corridors follow mineral deposits. Through EI-TAF, the Bank is assisting the GoL to negotiate optimal shared ancillary infrastructure. This could be the starting point for a regional corridor approach where Liberian infrastructure to be developed in support of mining operations can link into Guinea, Sierra Leone, and Cote d'Ivoire. The corridor approach would receive a considerable boost if BHP and ArcelorMittal could come to an agreement about combining their iron ore interests in Liberia and Guinea and developing the infrastructure to link their operations to the Liberian port of Buchanan. The Ministry of Lands, Mines, and Energy has also recently indicated its support to enter the Bank-funded West Africa Mineral Governance Project, which supports the overarching goal to coordinate institutions and infrastructure in the mining sectors of West African countries.

Chapter 4

Final Observations and Next Steps

The World Bank has played an important role in helping to rejuvenate the mining sector in many low- and middle-income countries around the world in the last two decades. These reforms often quickly led to large increases in investment in mineral investment and exploitation. When mineral prices rose in the early 2000s, the return on these reforms rose substantially. Over time, the complexity of the reform efforts increased rapidly as the issues to be faced and the objectives to be met increased. The approach used by the Bank has been to adapt in an evolutionary manner, as new issues did not replace old ones but were added on top of them. The objectives of most mining reform efforts around the world now include: (i) increase investment and exports; (ii) increase the capacity to monitor the sector and enforce regulations, particularly on environmental, social, and cultural issues; (iii) increase the share and transparency of rents returning to host countries as fiscal revenues; (iv) increase the capacity of national and sub-national governments to manage and use these rents; (v) ensure that host communities benefit from the mining operations; (vi) maximize the amount of employment and income generated by mining operations both directly and indirectly through linkages; and (vii) use the mining sector and its associated rents and infrastructure to foster industrialization through the development of clusters and resource corridors.

Each of these objectives is a considerable challenge and much progress has been and is being made through the efforts of national governments, mining companies, civil society organizations (CSOs), donor countries, and international institutions like the World Bank. Staff members from various parts of the Bank are actively involved in deepening the analysis of the impacts of the mining sector at the micro, institutional, and macro levels. Bank work is being undertaken on the roles of foundations and community development agreements in furthering sustainable development around mining communities. It continues on increasing the capacity of local governments to manage increased revenues from EI. Major initiatives are underway on governance and extractive industries and the political economy of extractive industries. Work on the value chain, particularly managing fiscal revenues (link 4) and enhancing the contribution of the mining sector to sustainable development (link 5), continues throughout the Bank, both in operations and analytical studies.

The objective of all these efforts—including many others outside the Bank—is to strengthen each link in the value chain but even more so to strengthen the 'links across the links.' It has been a difficult, although mostly successful challenge to increase investment in mining in low-income, often conflict-torn countries. It has been even more difficult to increase the benefits to host countries and communities but significant and increasing success is being achieved in several dimensions. The outstanding challenge in mineral-rich countries is to leverage the various benefits brought by the sector to achieve a sustainable development path that is on a much higher secular trend and broadly shared by the population.

Annex 1:

Mining Sector Projects supported by World Bank to Governments

In Table A1-1, all Bank-supported projects in the mining sector from 1988–2011 with at least a $1 million contribution are listed. There are 36 projects (in bold), including a project under preparation for Malawi, that are designated as principally focused on mining sector reform or related capacity building.

Table A1-1: World Bank Projects with Mining Sector Activities (>$US 1m): 1988–2011

Fiscal Year	Country	Project Name	Financing ($USm)
1988	**Ghana**	**Mining Sector Rehabilitation Project**	**40**
1989	China	Hubei Phosphate Project	137
1989	Jamaica	Clarendon Aluminum Project	15
1989	**Bolivia**	**Mining Sector Rehabilitation Project**	**35**
1991	**Mexico**	**Mining Sector Restructuring Project**	**200**
1993	**Mali**	**Mining Sector Capacity Building Project**	**6**
1993	India	Jharia Mine Fire Construction	12
1994	**Ecuador**	**Mining Technical Assistance**	**14**
1994	**Peru**	**Energy and Mining TA Program**	**12**
1994	Mongolia	Economic Transition Support	20
1995	**Ghana**	**Mining Sector Development & Capacity Building**	**12**
1995	**Tanzania**	**Mineral Sector Development**	**13**
1996	Guinea	Mining Sector Investment Promotion	12
1996	**Zambia**	**Economic Recovery & Investment Promotion TA**	**23**
1996	India	Coal Environmental & Social Mitigation	63

(continued)

Table A1-1: World Bank Projects with Mining Sector Activities (>$US 1m): 1988–2011 *(continued)*

Fiscal Year	Country	Project Name	Financing ($USm)
1996	Mongolia	Mongolia Coal Project	35
1996	Russia	Coal Secal (Coal Mine Closure)	500
1996	Ukraine	Coal Pilot	16
1996	**Argentina**	**Mining Sector Development**	**30**
1997	**Burkina Faso**	**Mining Sector Capacity Building & Environmental Management Project**	**21**
1997	Ukraine	Coal Secal (Mine Closure)	300
1998	Madagascar	Mining Sector Reform Project	5
1998	India	Coal Sector Rehabilitation	532
1998	Russia	Coal Secal II (Mine closure)	800
1998	**Argentina**	**Mining Development TA**	**40**
1999	**Mauritania**	**Mining Sector Capacity Building**	**15**
1999	**Zambia**	**Public Sector Reform & Export Promotion**	**173**
1999	Poland	Hard Coal Secal 1 (Mine closure)	300
1999	Romania	Mine Closure and Social Mitigation	44.5
2000	Zambia	Mine Township Services Project	38
2000	**Papua New Guinea**	**Mining Sector Institution Strengthening**	**10**
2001	Algeria	Energy & Mining TA	18
2001	**Mozambique**	**Mineral Resources Project**	**18**
2001	Poland	Hard Coal Secal 2 (Mine Closure)	100
2002	**DR Congo**	**Economic Recovery Credit (Begin restructuring of mining sector)**	**100***
2003	**Madagascar**	**Mineral Resources Governance Project**	**32+8 (2007)**
2003	**Mauritania**	**2nd Mining Sector Capacity Building**	**18+5 (2006)**
2003	Zambia	Copperbelt Environment Project	40
2003	**Ethiopia**	**Energy Access Project (Mining Sector Reform)**	**2.5***
2003	**Burkina Faso**	**Competitiveness and Enterprise Development (Mining Sector Reform)**	**3.9***
2004	**Uganda**	**Sustainable Management of Mineral Resources**	**25+5 (2009)**

Table A1-1: World Bank Projects with Mining Sector Activities (>$US 1m): 1988–2011 *(continued)*

Fiscal Year	Country	Project Name	Financing ($USm)
2004	Poland	Hard Coal Social Mitigation (Mine Closure)	200
2005	**Nigeria**	**Sustainable Management of Natural Resources**	**120**
2005	Mali	Growth Support Project (Infrastructure for Mining)	3.9*
2005	Zambia	Economic Expansion & Diversification (Gemstones)	4.2*
2005	**Sierra Leone**	**4th Economic Rehabilitation & Recovery Project (Capacity Building & Regulatory Reform)**	**3.8***
2005	Romania	Mine Closure, Environment, & Socio-Economic Regeneration	120
2006	**DR Congo**	**Transitional Support for Economic Recovery (Improve mining sector governance)**	**13.5***
2006	**Serbia & Montenegro**	**Programmatic Private & Financial Development Policy (Strengthen mining legal framework)**	**2.2***
2006	Kosovo	Energy Sector Cleanup & Land Reclamation (Environmental Capacity Building in Mining)	1.7*
2006	**Afghanistan**	**Sustainable Development of Natural Resources**	**30+10 (2010)**
2007	Central African Republic	Reengagement and Institution Support Building Program (Mining Sector Reform & Promotion, Artisanal Mining)	20*
2007	Serbia	Bor Regional Development (Environmental and social mining legacy issues)	21.5*
2007	**Sierra Leone**	**Programmatic Governance Reform & Growth (Capacity building)**	**2***
2007	Philippines	National Program Support for Environment and Natural Resources Management	5*
2007	Kosovo	Lignite Power Technical Assistance (Mine technical analysis, capacity building in Ministry of Energy & Mines)	2.6*

Table A1-1: World Bank Projects with Mining Sector Activities (>$US 1m): 1988–2011 *(continued)*

Fiscal Year	Country	Project Name	Financing ($USm)
2008	Ghana	Natural Resources and Environmental Governance (Fiscal management, governance, transparency & social issues)	9.1*
2008	**Mongolia**	**Mining Sector Institutional Strengthening TA**	**9.3**
2008	**Papua New Guinea**	**2nd Mining Sector Institutional Strengthening TA**	**17**
2009	Peru	1st Programmatic Environmental DPL (Maintain & improve environmental performance of mining)	82.5*
2009	Mongolia	Development Policy Credit (Management of fiscal revenues, clarify policy)	9.6*
2009	Sierra Leone	2nd Government Reform & Growth Credit (Improve fiscal regime & services for mining)	2*
2009	**Tanzania**	**Sustainable Management of Mineral Resources**	**50**
2009	Togo	Economic Recovery & Governance (EITI)	2*
2010	**Lao PDR**	**TA for Capacity Building in the Hydropower and Mining Sectors**	**5***
2010	**Sierra Leone**	**Mineral Sector Technical Assistance**	**4**
2010	Botswana	Morupule B Generation and Transmission Project (Coal mine development)	27.3*
2010	Mali	Fourth Poverty Reduction Support Credit (Strengthen accountability and transparency in mining sector)	9.2*
2011	**DR Congo**	**Growth with Governance in the Mineral Sector**	**50**
2011	**Solomon Islands**	**Mining Sector Technical Assistance**	**1**
2011	**Malawi**	**Mining Growth and Governance Support (under preparation)**	**12.5**

Bold print = mining sector reform or related capacity building project.
* In the last column = this amount is the part that was or is for the mining sector activities of a bigger loan. For such projects, a description of the mining component is given in parentheses after the project name in column 3.
Additional financing for a project is captured by +X followed by the year. For example, the Uganda 2004 project received $5 million of additional finance in 2009.

Suggested Reading Related to Mining Sector Reform

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The World Bank Oil, Gas, and Mining Unit

The World Bank Group's role in the oil, gas, and mining sectors focuses on ensuring that its current interventions facilitate the extractive industries' contribution to poverty alleviation and economic growth through the promotion of good governance and sustainable development.

The Oil, Gas, and Mining Unit serves as the Bank's global sector management unit on extractive industries and related issues for all the regions of the world. It is part of the Bank's Sustainable Energy Department.

Through loans, technical assistance, policy dialogue, and analytical work, the Unit leads a work program with multiple sector activities in more than 70 countries, of which almost half are in Sub-Saharan Africa. More specifically, the Oil, Gas, and Mining Unit:

- Advises governments on legal, fiscal, and contractual issues and on institutional arrangements as they relate to natural resources, as well as on good governance practices.
- Assists governments in setting up environmental and social safeguards in projects in order to promote the sustainable development of extractive industries.
- Helps governments formulate policies that promote private sector growth and foreign direct investments.
- Advises governments on how to increase the access of the poor to clean commercial energy and assess options for protecting the poor from high fuel prices.

In essence, the Oil, Gas, and Mining Unit serves as a global technical advisor that supports sustainable development by building capacity and providing extractive industry sector-related advisory services to resource-rich governments. The Unit also carries out an advocacy role through the management of the following global programs:

- The Extractive Industries Transparency Initiative (EITI) Implementation Support Facility, which supports countries implementing EITI programs
- The Global Gas Flaring Reduction (GGFR) Public-Private Partnership, which brings governments and oil companies together to reduce gas flaring
- The Communities and Small-Scale Mining (CASM) Partnership, which promotes an integrated approach to addressing issues faced by artisanal and small-scale miners
- The Women and Extractive Industries Program, which addresses gender issues in extractive industries
- The Petroleum Governance Initiative (PGI), which promotes good governance.
- The Extractive Industries Technical Advisory Facility (EI-TAF), which facilitates "rapid-response" advisory services on a demand-driven basis to build capacity for extractive industry resource policy frameworks and transactions.

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The World Bank
1818 H Street, N.W.
Washington, D.C. 20433
USA
www.worldbank.org/ogmc (*or* /oil *or* /gas *or* /mining)