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Best Practices in Investment for Development

How to Attract and Benefit from FDI in Mining: Lessons from Canada and Chile

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UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

BEST PRACTICES IN INVESTMENT FOR DEVELOPMENT

CASE STUDIES IN FDI

How to Attract and Benefit from FDI in Mining:

Lessons from Canada and Chile

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NOTE

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The following symbols have been used in the tables:

Two dots (..) indicate that data are not available or not separately reported. Rows in tables have been omitted in those cases where no data are available for any of the elements in the row.

A dash (-) indicates that the item is equal to zero or its value is negligible.

A blank in a table indicates that the item is not applicable.

A slash (/) between dates representing years – for example, 2004/05, indicates a financial year.

Use of a dash (–) between dates representing years – for example 2004–2005 signifies the full period involved, including the beginning and end years.

Reference to the "dollars" ($) means United States dollars, unless otherwise indicated.

Annual rates of growth or change, unless otherwise stated, refer to annual compound rates.

Details and percentages in tables do not necessarily add to totals because of rounding.

PREFACE

The Investment Advisory Series provides practical advice and case studies of best policy practice for attracting and benefiting from foreign direct investment (FDI), in line with national development strategies. The series draws on the experiences gained in, and lessons learned through, UNCTAD's capacity-building and institution-building work in developing countries and countries with economies in transition.

Series A deals with issues related to investment promotion and facilitation and to the work of investment promotion agencies (IPAs) and other institutions that promote FDI and provide information and services to investors. The publications are intended to be pragmatic, with a how-to focus, and they include toolkits and handbooks. The prime target audience for series A is practitioners in the field of investment promotion and facilitation, mainly in IPAs.

Series B focuses on case studies of best practices in policy and strategic matters related to FDI and development arising from existing and emerging challenges. The primary target audience for series B is policymakers in the field of investment. Other target audiences include civil society, the private sector and international organizations. Series B was launched in response to a call at the 2007 Heiligendamm G-8 Summit for UNCTAD and other international organizations to undertake case studies in making FDI work for development. It analyses practices adopted in selected countries in which investment has contributed to development, with the aim of disseminating best practice experiences to developing countries and countries with economies in transition. The analysis forms the basis of a new technical assistance work programme aimed at helping countries to adopt and adapt best practices in the area of investment policies.

For Series B, UNCTAD's approach is to undertake case studies of a pair of developed and developing or transitional economies that exhibit elements of best practices in a selected issue. Country selection follows a standard methodology, based primarily on the significant presence of FDI and resulting positive outcomes.

The Investment Advisory Series is prepared by a team of UNCTAD staff and consultants in the Investment Policies Branch, under the guidance of James Zhan. Fact-finding missions were undertaken in Canada and Chile in the summer of 2009. Draft chapters for this study were prepared by Keith Brewer, Juan Carlos Guajardo, and Philip Maxwell. The report was finalized by Cam Vidler. Contributions and comments were received from Richard Bolwijn, Chantal Dupasquier, Ioanna Liouka, John Tilton, Joerg Weber and Desiree Van Welsum. The report has also benefited from interviews with current and former government officials, the domestic and foreign private sector, and local stakeholders. Financial support was received from the Government of Germany.

Geneva, November 2010

CONTENTS

BOXES

FIGURES

TABLE

Canada

Chile

KEY FACTS TABLE

	Canada			Chile		
	1981-1990	**1991-2000**	**2001-2010**	**1981-1990**	**1991-2000**	**2001-2010**
Population (million)*	27.7	30.68	33.7	13.2	15.4	16.8
Annual GDP growth	2.8	2.9	3.1	3.9	6.5	5.3
GDP per capita ($)*	21037	23623	48192	2540	4877	15400
GDP by sector (%)						
Services	59	62	78	49.8	55.5	53.9
Industry	31	28	20	41.5	38.4	40.5
Agriculture	3	3	2	8.7	6.1	5.6
FDI inflows (annual average) ($ million)	3960	16530	35948	526	3667	8103
FDI outflows (annual average) ($ million)	4548	16832	42059	9	1324	3113
FDI inflows (% of GDP)	1.0	2.7	3.1	1.9	5.2	6.5
FDI inflows (% gross fixed capital formation)	4.5	14.2	14.5	9.6	22	30.2
Exports of goods and services (% GDP)	26.7	36.6	35	27.5	28.8	40.2
Imports of goods and services (% GDP)	25.2	34.4	33.3	26.2	28.3	32.8

Source: UNCTAD, FDI/TNC database and GlobStat database.
Note: Simple annual average.
* Data are for 1990, 2000 and 2010 only

ABBREVIATIONS

BIT	bi-lateral investment treaty
CANMET	Canada Centre for Mineral and Energy Technology
CIC	China Investment Corporation
CIMM	Centro de Investigación en Minería y Metalurgia
CODELCO	National Copper Corporation of Chile
COCHILCO	Chilean Copper Commission
CONAMA	National Commission of the Environment
COREMA	Regional Commission of the Environment
CSR	corporate social responsibility
FDI	foreign direct investment
FIRA	Foreign Investment Review Act
GDP	gross domestic product
EDC	Export Development Canada
EIA	environmental impact assessment
IBA	impact-benefit agreement
ICA	Investment Canada Act
ICMM	International Council on Mining and Minerals
IFC	International Financial Corporation
ILO	International Labour Organization
MAC	Mining Association of Canada
M&A	merger and acquisition
NAFTA	North American Free Trade Agreement
NEP	national energy programme
NGO	non-governmental organization
NORCAT	Northern Centre for Advanced Technologz
NPV	net present value
NRCan	Natural Resources Canada
OECD	Organization for Economic Cooperation and Development

PDAC	Prospectors and Developers Association of Canada
R&D	research and development
SOE	State-owned enterprise
TNC	transnational corporation
TSM	Towards Sustainable Mining
TSX	Toronto Stock Exchange
UNCTAD	United Nations Conference on Trade and Development
WMI	Whitehorse Mining Initiative

INTRODUCTION AND ANALYTICAL FRAMEWORK

The purpose of this report is to identify best practice policies that successfully attract foreign direct investment (FDI) in mining, while optimizing its economic, environmental and social impacts. The report focuses on two cases, Canada and Chile, relying on primary and secondary research, including interviews with some 20 stakeholders in both countries.[1] The first chapter provides an overview of mining as an economic activity and the challenges facing host governments in balancing the interests of foreign investors and those of the host country. The following two chapters look at how Canada and Chile, respectively, have addressed these challenges. The final chapter compares the two cases, and draws out lessons for policymakers in mineral-rich developing countries.

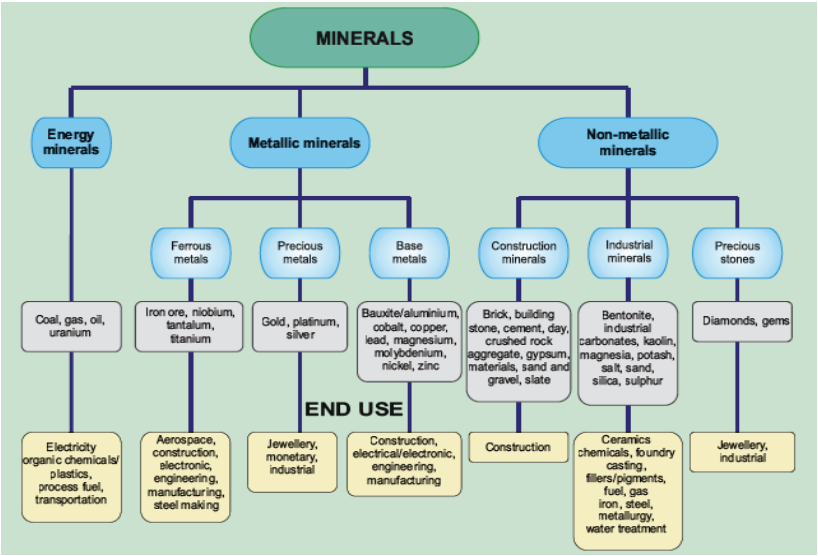
A. The global mining industry: market and industry players

Minerals vary widely in their physical and chemical characteristics. Some are rare, while others are relatively abundant. A typical taxonomy such as that used by UNCTAD divides minerals into metallic, non-metallic and fuel minerals (UNCTAD, 2007: 84). Metals can be further divided into ferrous metals, base metals and precious metals, and non-metallic minerals into construction minerals, industrial minerals and precious stones (figure I.1). While oil and gas are of particular economic importance, the focus of this study is on the other minerals, including the energy minerals of coal and uranium, more than fifty metals, and also a large number of non-metals. All play a role in the production of the world's economic goods and services and are, therefore, crucial to every day economic activity and social and economic development.

The use of minerals and energy has increased dramatically since the industrial revolution, with consumption during the 20th century exceeding the cumulative total of such consumption in all earlier periods. In 2002, the minerals sector accounted for some $1.2 trillion (about 4 per cent of estimated world GDP).[2] Following dramatic increases in mineral prices starting after 2003, world

minerals and energy value added increased to more than US$3 trillion in 2007 (around 6 per cent of world GDP). Oil and gas accounted for about 75 per cent of total mineral production by value, while other minerals (of which coal, iron ore, gold, bauxite, nickel, zinc, copper and the platinum group metals are most prominent) accounted for the remaining share.

Figure I.1: A taxonomy of minerals



Source: UNCTAD (2007).

Mineral resources must be discovered before extracting them, which is a costly process. They are fixed in quantity, variable in quality, and often in remote locations. Once extracted, they must be processed, refined and sold to intermediate and end-use markets. The distinction between the exploration and extraction phases of mineral investment, both of which are the focus of this study, corresponds to a division of labour between two different types of mining companies. A large population of "juniors" is involved

primarily in exploration activities (UNCTAD, 2007: 109). These firms are similar to small high-technology firms in other industries, in that they engage in risky investments with potentially high returns. If a significant deposit is discovered, it is then typically sold to a large producer firm (i.e., a "senior" firm) with superior extraction and processing capabilities. Senior firms have significant economies of scale, technical expertise and access to finance, all of which provide them with a comparative advantage in mine construction and mineral production, processing and refining.

Junior and senior companies are often transnational, and engage in significant FDI. This internationalization of the industry can be understood from a host-country or home-country perspective. Financial and technical constraints have led many mineral-rich developing countries to rely on FDI to translate their mineral wealth into broader economic development (UNCTAD, 2007: 92). Domestic financial markets are often insufficient for large, capital-intensive projects, and domestic firms may have problems securing foreign lending at low rates. Even state-owned enterprises (SOE) with financial backing from the government often lack the experience to extract mineral deposits at a competitive cost. As a result, throughout the 1980s and 1990s, many mineral-rich developing countries reformed their mining codes and investment legislation to permit the entry of foreign companies (UNCTAD, 2007: 161).

Aside from capturing returns by exploiting mineral deposits in well-endowed countries, FDI has been motivated by the desire of home countries and their investors to secure access to raw mineral inputs for their economic activities. Countries with limited domestic mineral resources must import them to support their economies and supply their factories. These countries include Britain, France, Germany and Japan, but also, more recently, China, India, and the Republic of Korea. Their firms have been encouraged to invest in mines and mineral processing facilities abroad to ensure a steady and reliable supply of minerals at a reasonable price. Global FDI

flows have also reflected major merger and acquisition (M&A) activity by transnational corporations (TNCs) in the industry since the mid-1990s.

B. Attracting FDI in mining

Profitability is a key goal of FDI in mining projects. The level of profits that TNCs expect to derive from any new extractive project is determined by a range of economic and policy factors. These factors will influence the decision to invest, whether it is for a new or an existing project. Moreover, investments in mining are typically capital-intensive, have long gestation periods and involve high levels of uncertainty (UNCTAD, 2007: 91-92). The exploration phase of a mining investment can be very lengthy, and there is no guarantee of a discovery. Mine construction and development can involve massive investments in machinery and equipment. Even if a mine goes into operation, it can take decades for the company to recover the original investment, and its profitability is highly sensitive to risks related to technical issues, market conditions (e.g. commodity prices), and changes in the mineral regime. Countries seeking FDI in mining need to consider these profitability and risk factors when designing their regime for the industry.

This report builds on the work of authors such as Otto (1992a, 1992b, 2006 and 2009) and Johnson (1990) who interviewed mining executives to assess the importance of key factors in influencing their investment decisions. Indicators that encompass these factors are used by Behre Dolbear Group Inc. (2010) and the Fraser Institute (McMahon and Cervantes, 2010) in their annual assessments of the attractiveness of mining jurisdictions. Their reports are a valuable resource with which to compare mineral investment climates across countries.

Drawing from these studies on the determinants of mining investments, two sets of factors are identified for the purposes of evaluating the cases of Canada and Chile. Clearly, geological potential is a pre-requisite to the investment decision of a mining company and the perception of this potential is also affected by the

level of publicly available geological data. Yet, other important supply-side factors that determine whether a given deposit can be profitably exploited include:

- Infrastructure, such as transportation, water and electricity, all of which are important to the mineral production process;
- Availability of skilled labour, such as mining technicians, engineers and managers.

The second set of determinants of profitability relate to policy and institutional factors, including:

- Political stability and quality of governance, including the likelihood of unexpected policy and regulatory changes, and the clarity and enforcement of regulations;
- FDI legislation and policy, including protection and treatment of foreign investors, as well as the ability to repatriate profits;
- The nature and security of mining concessions or titles;
- The level of taxation, but also its structure;
- The level and clarity of environmental and social regulatory obligations.

While each of these determinants is important, it should be noted that the weight assigned to each is not equal. The relative importance of various factors will depend on the context, but a general sense of investor priorities is presented in table 1, which ranks 23 criteria for mining investment decisions for both the exploration and operations phases. It is notable that many of the policy factors relate not so much to the substance of government regulations, but to the level of uncertainty associated with them.

Table I.1: A ranking of mining investment decision criteria factors ranked by importance

Ranking at Stage		
Mining	**Exploration**	**Decision Criteria Based on:**
1	2	Security of tenure
2	3	Ability to repatriate profits
3	na	Measure of profitability
4	8	Stability of exploration/mining terms
5	9	Ability to predetermine tax liability
6	7	Realistic foreign exchange regulations
7	5	Company has management control
8	10	Ability to predetermine environmental obligations
9	4	Consistency and constancy of mineral policies
10	11	Stability of fiscal regime
11	6	Mineral ownership
12	12	Ability to raise external financing
13	16	Method and level of tax levies
14	21	Permitted external accounts
15	17	Import-export policies
16	13	Long-term national stability
17	14	Established mineral titles system
18	18	Majority equity ownership held by company
19	22	Modern mineral legislation
20	20	Internal (armed) conflicts
21	19	Right to transfer ownership
na	1	Geological potential for target demand
na	15	Ability to apply geological assessment techniques

na: not applicable

Source: Otto (1992b).

Note: Survey results based on 39 companies, mainly from Heads of exploration departments. Based on 60 possible factors.

C. Managing the development impact

Among the more than 200 economies in the world today, some 50 depend on minerals as a major source of their exports and as a significant contributor to their GDP. While less dependent, several other countries are also well endowed with minerals. Yet, despite their mineral wealth, a significant number of them have not managed to achieve positive development outcomes. To explain this paradox, some have suggested the existence of a "resource curse" (box 1.1). Given a combination of broader economic and political challenges associated with mineral exploitation, the growth of the mining industry is not a sufficient condition for economic growth and societal welfare. While not ignoring these issues, this study has a narrower scope, limiting itself to how governments can attract mining FDI and optimize the more direct benefits and costs that arise from these activities. Broader issues of natural resource-based development, such as economic diversification, macroeconomic stability, and the political effects of resource revenues, are therefore not explicitly addressed.

Box I.1: Mineral-based economic development and the "resource curse"

The idea of the “resource curse” is sometimes brought up in the context of poor economic performance by mineral rich countries. It may arise when a combination of external market forces, internal economic stresses and distorted processes of policy making generate slower economic growth and development in resource-rich countries. In a strictly economic sense, this occurs through, for example, falling real mineral prices and mineral price volatility, and losses of competitiveness in other economic sectors due to an overvalued real exchange rate (often referred to as "Dutch Disease"). Policy-making processes can be distorted, for example, by corruption and excessive rent seeking stemming from the availability of resource revenues.

/...

Box I.1 (concluded)

Any convincing rationale for FDI-supported mineral development must demonstrate that these challenges have been addressed. Research has found that high-quality governance institutions, characterized by bureaucratic autonomy, transparency, low corruption, the rule of law, and strong property rights, can prevent mineral-rich countries from falling victim to the resource curse. These institutions foster effective macroeconomic management and limit political rent-seeking, allowing mineral wealth to complement or provide a strong foundation for broader socio-economic development.

Source: Sachs and Warner (1995); Davis and Tilton (2005); Mehlum *et al.* (2006).

Governments should seek to set tax and regulatory requirements at an optimal level that balances the need to attract foreign capital and expertise, with the need to maximize net benefits to the host country. These requirements can take the form of fiscal contributions, or regulations related to economic, environmental and social impacts. If requirements are set too high, profitable mining projects may end prematurely, and future investment may be deterred. This undermines the long-term development of a country's mineral deposits. If set too low, companies will have a strong incentive to invest, but mineral deposits may be exhausted while the host country appropriates only a small portion of the benefits, with potentially significant environmental risks and social problems. More specifically, the optimal point can be defined as the point where the net present value (NPV) of future benefits is maximized (Otto *et al.*, 2006: 7-10).

Key economic objectives of government include increased investment, production, exports and job creation, the latter of which, however, is often limited due to the capital intensity of mining activities. Given the relatively limited direct economic contributions of mining investment, governments primarily focus on the use of taxes and royalties to translate mineral assets into public revenue streams. This task, however, is not straightforward. A number of

factors need to be taken into consideration when it comes to setting the level and structure of taxation (box I.2).

To broaden the impact of mining activities on the domestic economy, governments may encourage TNCs to locate their processing or refining activities in the host country. However, these efforts have had very limited success (UNCTAD, 2007: 140, 169). Refining and processing assets are heavily dependent on economies of scale, and the scope for promoting these activities is limited, particularly in small developing countries. In fact, investments in mineral extraction by major TNCs are often motivated in part by the need to supply their own refineries abroad.

Another approach to increasing the economic contribution of mining is to focus on upstream activities. Government can promote the use of domestic suppliers of goods and services to the mining sector, with the objective that this will increase demand for local products and result in spillovers of knowledge, skills and technology from foreign affiliates. Under certain conditions this can help develop related industries and even result in the creation of a mining industry cluster.[3] Having benefited from inward FDI, domestic firms may, in turn, invest abroad, generate profits and repatriate their dividends. Policies to encourage linkages with the domestic economy should focus on building capacity among local firms and workers (e.g. technological capabilities, access to finance, skills, etc.), so that they can adequately cooperate with foreign affiliates (UNCTAD, 2007: 141, 168-69).

Box I.2: Policy considerations for level and structure of mineral taxes and royalties

Highly profitable mining opportunities may justify higher rates of taxation. Mineral deposits can range from low to high grade, based on the concentration of the target mineral. Accordingly, the profitability of mines exploiting these deposits can vary considerably, from marginal mines to mines with significant rents beyond the level necessary to justify the investment. In the latter case, these rents could theoretically be taxed away without affecting the decision of a company to invest. Thus, many governments apply different tax rates to different minerals, or to different mines. Yet governments should remain cautious when taxing mineral rents for two reasons. First, high short-term rents may be justified to compensate for low profits or outright losses in other periods due to factors such as low commodity prices. Second, the taxing of mineral rents also lowers the incentive for private exploration, since these costly activities are motivated by the search for high-rent mineral deposits.

While the tax rate is a key determinant of the division of revenues between the government and company, the structure of the tax is another important consideration. Taxes can take two general forms: 1) production-based taxes which determine liabilities according to the volume or value of minerals exploited, and 2) profit-based taxes which apply the tax rate to a measure of company income or profits (i.e. revenues minus qualified costs).

From an investor's perspective, profit or income-based taxes are preferable, since they are based on a company's ability to pay, ensuring that tax liabilities are reduced when company profits are low. They may also allow the company to limit tax payments until it has recovered part or all of its up-front costs. In contrast, production-based taxes can require payments to the government even if a project is making losses, potentially resulting in scaled back production or even premature mine closure. Over the past decades, many countries have shifted away from production-based taxes and royalties towards taxation based on the level of company income or profits.

Yet, production-based taxation has some advantages over profit-based taxation from a government's perspective. First, taxes on mineral output

/…

Box I.2 (concluded)

ensure a more reliable and steadier stream of revenue to the government.

Under profit-based taxation, the government shares part of the financial risk with the company. Second, it is easier to calculate the tax obligations of companies under production-based taxes, since it requires only that company output be tracked. Profit-based taxation is more complex, involving calculations of deductible costs, depreciation and other allowances. Governments that do consider profit-based taxation must ensure that they have the necessary bureaucratic capacity and expertise in tax administration, in addition to mechanisms to deal with more volatile revenue streams.

Source: Otto *et al.* (2006: 23-27, 62-68); ICMM (2009: 36-37).

Aside from maximizing economic benefits from FDI in mining, governments seek to minimize negative aspects, including adverse environmental impacts. These include the dumping and accumulation of waste, water and air pollution, deforestation, and acid mine drainage. Mine closure and restoration of the land is another important environmental issue. Though mining activities have traditionally taken place underground, open-cut operations, which often have a larger environmental footprint, have become more prevalent. Governments seek to minimize these environmental costs through increased monitoring and regulation, including the use of environmental impact assessments (EIAs). Over the past thirty years, greater environmental protection requirements have significantly changed the industry.

The large footprint of mining projects may also result in adverse social impacts, which governments seek to mitigate. These issues most often concern land use conflicts with local and indigenous communities, including the effects of mining activities on economic livelihoods and traditional lifestyles. Several aspects of government policy are relevant in this area. At the basic level, it is important to have a legal framework outlining the rights of local

communities and indigenous peoples with respect to mineral exploration and exploitation on their lands.[4] In any case, governments should consider community input prior to project development, as is done in many countries through the EIA process and other mechanisms. Legal requirements may also exist for companies to consult affected communities and seek their agreement on project development. Community input can result in the adoption of specific commitments, covering a range of economic, social, cultural and environmental costs and benefits. Yet, it is important for governments to oversee company-community consultation processes to ensure due process, and to follow-up on the implementation of commitments by companies. To guide the relationship between indigenous peoples and natural resource development, some countries have signed and ratified the International Labour Organization's (ILO) Convention 169, which outlines indigenous land and resource rights, as well as a set of consultation procedures.

Even if government policy does not directly address or enforce requirements limiting these negative environmental and social externalities, companies may nonetheless voluntarily incur costs to limit them. With the rise of civil society and activist networks, it is becoming increasingly important for companies to secure a "licence to operate" from key stakeholders. When the interests of stakeholders are not taken into account, these groups may seek to apply some form of veto power to a project to prevent, alter or delay the project. This kind of behaviour can involve a variety of actions, such as general bureaucratic delay in approval by different levels of government, worker strikes, court challenges on environmental grounds or by indigenous groups, and unexpected rises in mining taxation.[5] In each of these situations, profitability will be undermined.

This report examines key channels through which mining FDI impacts local development. These include:

- The level of investment, production and employment at the national and regional level;
- The level and distribution of tax revenues received by different levels of government;
- Contributions to the development of competitive local enterprises; and
- Environmental and social impact.

Throughout the report, the role of government policies in shaping these impacts is also discussed.

D. Canada and Chile as successful cases

The implicit tenet of this study is that minerals offer countries economic opportunities if their exploitation is effectively managed. The case studies in this report, Canada and Chile, have attracted significant FDI, particularly in recent years, and are seen as highly attractive destinations by investors in terms of both mineral potential and policy factors.[6] At the same time, governments in each country have successfully employed policies to manage the direct benefits and costs arising from these mineral investments. Table I.2 gives a snapshot of their respective mining industries and the role of FDI within them.

Table I.2: Snapshot of mineral mining industry and FDI in Canada and Chile

	Canada	***Chile***
Mineral production relative to GDP (2008)	$38 billion (2.6 per cent of GDP)	$29.8 billion (17.6 per cent of GDP)
Major minerals currently produced	Potash, nickel, copper, gold, iron ore, diamonds, sulphur, uranium	Copper, molybdenum, gold, lithium, iron ore, iodine

Mining FDI (stock, 2008)	$20.3 billion	$23.5 billion
Major TNC presence	Anglo American, BHP Billiton, DeBeers, RioTinto, Vale, Xstrata	Anglo American, Barrick Gold, BHP Billiton, Freeport-McMoRan, Goldcorp, Teck Cominco, Rio Tinto, Xstrata
Foreign ownership as share of total	30 per cent of production (2006)* 48 per cent of industry assets (2006)	60 per cent of production (2006)*
Specific targeting of foreign investors?	No; entry through general foreign investment regime	Yes; special incentives for mining projects in foreign investment legislation; government targeting of mining TNCs
Link between FDI and historical development of mining industry	Limited; majority of current FDI stock linked to acquisition of domestic mining companies over past decade	Significant; greenfield FDI responsible for majority of increased output since late 1980s

Sources*: DIPRES; MAC (2009); Natural Resources Canada; Statistics Canada (2010); UNCTAD (2007); US Geological Survey; Author's calculations.*
Note*: All figures excludes oil and gas extraction*
**Based on value of output; excludes non-metal mining.*

Although the importance of inward FDI to the development of Canada's mining industry has been relatively limited when compared with countries such as Chile, the Canadian policy experience still has many relevant dimensions for policymakers in mineral-rich developing countries. These include the use of consultative processes to create policy consensus, taxation policy and revenue sharing between different levels of government, the evolution of environmental regulations, and the integration of

indigenous peoples in mining decisions. The recent acquisitions of Alcan, Noranda/Falconbridge and Inco by foreign mining TNCs also provide an opportunity to examine the impact of M&As on local mining and related activities. Finally, the significant population of outward-oriented mining firms and mining suppliers provides clues regarding the potential future of maturing mining industries.

The case of Chile is particularly relevant for mineral-rich developing countries, since it relied heavily on foreign investors to develop its mining industry. It has gone through many challenges along the way, including the need to provide an attractive policy climate after the nationalizations, and more recently, the need to ensure that the country receives a fair share of mineral rents from foreign investors. Chile's use of foreign companies to enhance environmental and social practices in the mining industry also holds lessons for developing countries.

The following two chapters review the two cases in depth along the dimensions identified early in this section. The final chapter brings the two cases together and identifies key lessons for other policymakers seeking to use FDI to develop their mining industry in a way that contributes to national development objectives.

Notes

[1] These interviews were conducted with representatives from three broad stakeholder groups: (i) mining company executives (as representatives of companies, their shareholders and workforces); (ii) public servants, current and former ministers (as representatives of government); and (iii) other stakeholder groups (including academics, NGOs with a mineral sector focus, local community representatives and indigenous population representatives).

[2] These estimates have been derived from public domain UN data readily available on the Internet. They do not include the processing of concentrates to metals or related downstream compounds, which are typically included in manufacturing.

[3] According to the World Bank (2009), a cluster can be defined as an "*agglomeration of companies, suppliers, service providers, and associated institutions in a particular field. Often included are financial providers, educational institutions, and various levels of government. These entities are linked by externalities and complementarities of different types and are usually located near each other*."

[4] In many cases, surface (i.e. land) rights are held privately, while sub-surface (i.e. mineral) rights are held by the State, which can provide concessions without the explicit consent of the landowner.

[5] In some extreme cases, not dealing with unsatisfied stakeholders has resulted in the kidnapping of project staff, civil war in the area of the mine, and partial or full nationalization.

[6] McMahon and Cervantes (2010) and Behre Dolbear Group Inc (2010) rank Canada and Chile at or close to the top of the list of most attractive jurisdictions for mining investment.

II. FDI in mining – the Canadian experience

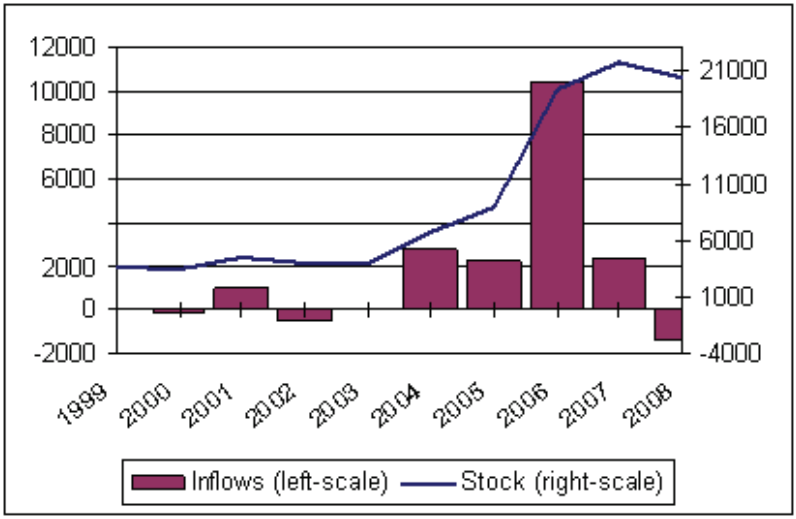
A. Industry background and FDI Trends

Canada has a long-standing mining history, which started before European settlement and has developed extensively since then.[1] According to Udd (2000), archaeologists have identified evidence of mining in Canada by indigenous groups dating some 9000 years. With the arrival of European explorers in the 1500s and of French settlers from the early 1600s there are several reports of small-scale iron, copper, lead-zinc and silver prospecting and mining activities. During the latter century, more significant coal mining began in New Brunswick and on Cape Breton Island in Nova Scotia and this continued through the 1700s. Udd's chronology details many significant discoveries of base metals (copper, lead, zinc and nickel), precious metals (gold and silver), iron ore, oil and gas, coal, uranium, potash and several other minerals. Many of these deposits have been exploited and, as a result, Canada emerged by the latter half of the 19th century as a major mineral producer and exporter. Many regional towns and districts throughout Canada can trace their origins to mineral exploitation and continue to depend on mining activities. Key examples include Sudbury, Val d'Or, and Timmins. Major cities such as Toronto, Vancouver and Montreal also developed strong links to mining, particularly in mining services. Calgary and Edmonton enjoy a strong association with the oil and gas industries.

Today, the volume of non-fuel mineral production in Canada is equivalent to around 2.5 per cent of GDP (table I.1). While this is low in comparison with countries such as Chile, it should be kept in mind that Canada remains the world's leading producer of uranium and potash, and is among the top five producers of gem-quality diamonds and nickel. It is also a significant producer of raw copper, gold and iron ore (Mobbs, 2010). Significant metal refining also takes place in Canada, resulting in the production of aluminium, zinc and refined copper and nickel.

Foreign capital has always been present in the Canadian mining industry, typically through portfolio investment. FDI played a role, but until recently, the bulk of mining industry development took place through activities of domestically controlled companies. A brief wave of economic and resource nationalism in the 1970s resulted in restrictive foreign investment policies, although a relatively liberal regime has been in place since. Though the government has not specifically targeted foreign investors to develop the domestic mining industry, the stock of FDI has increased rapidly in recent years. From 2003 to 2008, it grew four-fold, from under $5 billion to over $20 billion (see figure II.1). This sharp increase is due primarily to the acquisition of senior Canadian mining firms, including Inco, Noranda/Falconbridge and Alcan by foreign mining TNCs (Vale, Xstrata, and Rio Tinto, respectively). There have also been several major Chinese investments in Canadian metals firms. Due to these transactions, as well as several significant greenfield investments, most of the major international mining companies now have a presence in Canada (such as Anglo American, BHP Billiton, DeBeers, RioTinto, Vale, and Xstrata). There are now around 200 foreign mining companies operating in Canada (Mobbs, 2009), and around half of the industry's assets are foreign-owned (see table II.1).

Figure II.1: Canada: Inflows and stock of FDI (million US$)



Source: UNCTAD FDI Database

In parallel with rising FDI inflows, Canadian mining companies have also been making substantial investments abroad. These took off in the 1980s, when developing countries began to rewrite mining laws and opened up to foreign investment. Canada retains a strong international mining presence, with senior firms such as Barrick Gold, Goldcorp, Teck Resources, and Kinross Gold. In addition, the country has a large and growing population of small and medium-sized firms with exploration and mine assets overseas. In 2008, the stock of FDI held by Canadian mining companies abroad reached $21.6 billion.[2] The level of in- and outward investment gives Canada status as a mining hub, which has helped develop a professional services industry focused on the global mining industry.

B. Attracting FDI in mining

A number of combined factors have made Canada an attractive location for mining FDI. As outlined in Chapter I, important determinants of FDI include a combination of economic and policy factors: geological potential and the level of publicly available geological information; availability of infrastructure, including water, energy and transportation; availability of labour and skills; political stability and quality of governance; FDI policy; and the mining regime, including the system of land concessions or titles, taxation, and social and environmental regulations.

Most policies towards the mining industry in Canada are formulated and implemented at the provincial level, although the federal government also plays a role through foreign investment and tax laws, as well as some policies related to environmental and indigenous issues. The federal government also has jurisdiction over mining policy above the 60-degree latitude. Table II.1 outlines how Ontario, Quebec, British Columbia, and Saskatchewan compare to other jurisdictions worldwide in terms of investment attractiveness. Together, these provinces made up 69 per cent of the value of Canadian production of mineral production in 2008 (NRCan, 2008). The ranking is based on a survey of internationally active mining companies. The factors included in the table roughly correspond to those outlined above, and are ordered accordingly.

Table II.1: Mining investment climate in key Canadian jurisdictions (rank among 72 jurisdictions worldwide)

		Ontario	Quebec	British Columbia	Saskatchewan
Supply factors	Mineral potential assuming no regulation or land use restrictions	11	3	17	15
	Geological database	17	4	8	10
	Infrastructure (includes access to roads, power availability, etc.)	28	24	40	29
	Supply of labour/skills	4	3	8	12
Policy and institutional framework	Political stability	29	11	42	5
	Regulatory duplications and inconsistencies	30	3	45	18
	Uncertainty concerning the administration, interpretation and enforcement of existing regulations	33	2	38	7
	Taxation regime	24	2	43	22
	Uncertainty concerning environmental regulations	39	7	61	6
	Uncertainty concerning native/aboriginal land claims	65	35	72	41

Source: McMahon and Cervantes (2010).

Note: Based on survey of 672 representatives of mining companies around the world

In general, all four provinces are relatively attractive locations for mining investment, with geological features and the supply of labour and skills being notable strong points. Yet there is significant variance between these provinces when it comes to their policies and institutional frameworks. Whereas Quebec and Saskatchewan rank among the top jurisdictions in the world across many of these indicators, Ontario and British Columbia are perceived less favourably by investors, particularly in the area of environmental regulations and indigenous land claims. Details of the mining investment climate in Canada and its major provinces are discussed in more depth below.

Supply factors

Canada has significant mineral endowments, though reported levels of reserves of selected major metals (copper, nickel, silver, gold, lead, zinc and molybdenum) have fallen over the past 30 years, in some cases quite drastically (MAC, 2009). While falling reserves may be indicative of mature or even declining actual minerals reserves, the level of known reserves is also affected by exploration efforts.

Federal and provincial governments in Canada fund detailed programmes where geological survey results are provided as a 'public good' to stimulate further exploration. In the public sector, staffs of geologists provide information on likely drill targets. Moreover, provincial governments act as custodians of privately collected mineral assessment data. Typically, when an exploration licence is issued to a company for a certain territory, they are not charged a fee for the right to explore. Rather, they are required to spend a minimum amount of money each year to hold the right to explore over a certain territory. This results in a large database of information about exploration activities and results that reside with the provincial government. Data provided to each province remain confidential for a period of time, after which free access allows other companies to build on the knowledge accumulated. Therefore, the potential benefits from previous exploration are not lost. As a

result of these efforts, Canadian mining jurisdictions have some of the most extensive geological databases in the world (see table II.1).

Since 1954, the federal government has offered a unique tax vehicle to encourage exploration investments. "Flow-through shares" allow exploration companies with no revenues to transfer their expenditures to offset the tax obligations of their parent company. This has encouraged producing firms to engage in exploration activities. Since 1983, the exploration deductions could be transferred to taxpaying individuals to offset their personal income tax obligations. Flow-through shares have resulted in significant financing opportunities for private exploration activities and the government has continued to renew the legislation.

Although Canada has world-class infrastructure, it is primarily concentrated in populated areas. In more remote regions, connecting mine sites to electricity and transportation networks can be challenging, especially given the size of the country. As a result, international mining companies find the availability of infrastructure in Canada to be a mild deterrent to investment (see table II.1). Given its long mining history, the country has developed strong education and training institutions to support the development of skill sets specific to the mining industry, a point which investors recognize.

Political stability and quality of governance

The importance of natural resources such as minerals to the Canadian economy was recognized in 1867 by the authors of the Canadian Constitution. Under the division of powers in the Constitution, the federal government has responsibility for peace, order and good government (including the development and growth of the Canadian economy), and the provincial governments were given ownership of natural resources within their boundaries, and thus the right to levy taxes or royalties on mineral extraction. This clear division of powers minimizes the potential for intergovernmental conflict in the defined areas, resulting in more stable mining policies.

The historical role of mining in the Canadian economy has usually resulted in support for the industry from across the political spectrum. In cases where conflicts do emerge over the direction of mining policy, multi-stakeholder consultations have been used to build consensus and to ensure that policies are politically sustainable. The example from the mid-1990s presented in box II.1 illustrates the role of these processes in limiting policy uncertainty.

Box II.1: Multi-stakeholder policy formulation: the case of the WMI

By the early 1990s, the policy climate surrounding the mining industry had become highly contentious. The Club of Rome worries of the early 1970s, commodity price volatility over the next decade, and rising environmental concerns, combined to raise the level of policy uncertainty in the mining industry. There was much discussion among groups who considered themselves as stakeholders in mining in Canada. Consequently, the Intergovernmental Working Group on the Mineral Industry (including the federal Department of Natural Resources and provincial and territorial Mining Departments), formed in the early 1980s, researched and authored several studies from 1992 to 1993 on issues deemed important by various stakeholders.

These studies provided the basis for an on-going policy discussion involving the federal, provincial, and territorial mining ministers, industry, environmental groups, and representatives from labour and indigenous groups. This process became known as the Whitehorse Mining Initiative (WMI). Initiated by the Mining Association of Canada (MAC), with some financing from Natural Resources Canada, the WMI culminated in an Accord in 1994. While the Accord did not impose requirements on the different jurisdictions, the discussions resulted in compromises between the positions of stakeholders on desirable mining policies in various issues areas. Issues discussed included finance and taxation; environment; workplace/workforce/community; and land access. Interpersonal relationships across stakeholder groups were also created during the year long discussions. The outcomes were used to guide future policies and negotiations at the provincial and federal level, and also played a role in

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Box II.1 (concluded)

shaping the environmental and social activities of the private sector mining associations and their members.

Many federal and provincial policies concerning the mining industry since then have been arrived at through these types of multi-party discussions and negotiations. They are a mechanism and means of encouraging net benefits from mining activities, and ensuring that these benefits are appropriately shared and distributed among stakeholders.

Although public attitudes have typically been friendly to mining, skepticism of foreign involvement in the industry grew in the 1960s and early 1970s. Responding to concerns of resource scarcity and American corporate influence in the domestic economy, the Canadian government introduced more restrictive legislation. In the petroleum industry, the government created the National Energy Program (NEP) to promote Canadian ownership and to secure a steady stream of oil supplies for domestic use. The government also passed restrictive foreign investment legislation (see below). However, by the early 1980s, poor performance of the Canadian economy and the election of a new federal government brought a reversal of Canadian economic policy in the direction of deeper integration with the global economy. As a sign of this policy shift, negotiations began with the United States to create a free trade area (which would ultimately result in signing of NAFTA along with Mexico in 1992). Over the past few decades, public attitudes towards foreign investment in the mining industry have been generally positive, although the recent takeovers of senior Canadian mining firms by foreign TNCs has raised some political opposition.

In terms of governance, the Canadian bureaucracy is largely competent and effective, and corruption is minimal. Canada has a legal system based on the rule of law, with an independent judiciary. Investors can rely on the security of tenure that they acquire and on systems of remediation that are open and transparent in case of

dispute. The country ranks highly in a range of international surveys that are published annually. These include the Legatum Prosperity Index, Transparency International's Corruption Perception Index and the World Bank's Worldwide Governance Indicators, all of which measure political stability and the absence of violence, government effectiveness, regulatory quality, the rule of law and control of corruption.

While Canada in general can be considered as politically stable and as possessing high quality governance and legal institutions, investors find significant variance between provinces (see table II.1). Relatively low rankings for British Columbia and Ontario in terms of perceived political stability, regulatory duplication, and uncertainty about the administration of regulations, can be partly attributed to historic and on-going challenges in the provinces' management of environmental issues and indigenous land rights. These issues are further discussed below.

FDI policy

Canada has generally been open to foreign investment in the mining industry, although this was not always the case. In 1973, the Canadian government passed the Foreign Investment Review Act (FIRA), which was aimed at foreigners acquiring control of a Canadian business or establishing a new business. All acquisitions were subject to automatic review, as were new establishments above a certain threshold value. The standard for approval of an investment was that it would result in "significant benefits" to the Canadian economy. However, the principles by which to judge potential benefits were never made clear, and approval decisions tended to be secretive and without provisions for an appeal process. Often, the government would negotiate with foreign investors to extract a written commitment to undertake certain activities related to local content, employment, etc. There were no pre-set formats for the undertakings and these were legally binding for the investor. Furthermore, the government monitored approved investments (subject to the Act). If the investment involved specific

undertakings, the investor was asked for regular progress reports on their implementation. Some foreign investors heavily criticized the Act as being burdensome and too restrictive.

By the early 1980s, Canada began removing some of these legal and regulatory barriers to FDI. In 1982, the threshold for the review of new investments or direct acquisitions under the small business procedures was raised. In 1985, FIRA was replaced by the Investment Canada Act (ICA). The central objective of the ICA was to rely on private markets to allocate capital according to global efficiency. It was underpinned by the belief that Canada could benefit from increased foreign investment and incoming new technology. To accompany the new regime, the Investment Canada Agency was created to promote both domestic and foreign investment.

Under the ICA, a foreigner investing in Canada is required to notify the government, but formal review is required only in cases of acquisition of Canadian companies above a certain value.[3] Greenfield FDI projects are not subject to review, unless they are involved in cultural industries. In cases of review, the provincial and federal governments are consulted to identify any concerns regarding the impact of the investment. If concerns are raised, negotiations occur and the investor may be required to commit to certain legally binding undertakings (typically valid for three to five years), as under FIRA. However, the new standard for approval of a foreign investment has been lowered from "significant benefits" to "net benefits".[4] Moreover, Canadian governments have been reluctant to enforce negotiated commitments in court. For example, commitments on staffing levels by Vale, Rio Tinto and Xstrata after their recent takeovers have not been maintained, yet no formal action has been taken against them.[5]

The ICA still gives the Canadian government significant scope to block certain acquisitions by foreign companies. This has been seen most recently in the case of BHP Billiton's $40 billion takeover bid for PotashCorp, which at the time of writing had been

rejected by the Industry Minister for not providing "net benefits" to Canada.[6] Yet, to put this into perspective, it is only the second rejection since 1985, despite the number of notifications by foreign investors recently increasing to between 600 and 700 per year.

Mineral titles/concessions

Public ownership of natural resources, including land and minerals,[7] is divided between the federal and provincial governments according to their jurisdiction. A succession of judicial decisions has confirmed that the provinces have authority to enact laws related to mineral titles, exploration and mine. While the specific details of mineral titling vary by province, e.g. the filing or transfer of titles, there are some general principles embedded in Canada's common law legal system. These principles are similar to those in other common law jurisdictions that have also been successful in mining development such as Australia, Ghana, Botswana, the United Kingdom, and the United States.

The common law legal model enables individuals or companies to take ownership of a mining title, claim or lease as a property right (although the mineral deposits themselves typically remain property of the government). The ability to put multiple names on the title facilitates the use of a variety of investment vehicles, such as joint-ventures or trusts. The property rights aspect allows mineral titles to be easily transferred and facilitates financing for mining projects by allowing loans to be secured by the title. Financing of a mine is hampered if the mineral title belongs to the government as in countries with civil codes. Russia, for example, has had to use production-sharing agreements to get around the constraints posed by its civil code legal system. Although Quebec typically relies on the civil code model, its mineral titling regime is based on the principles found in common law.

In most jurisdictions, including British Columbia, Ontario and Quebec, individuals and companies must acquire a prospector's license before engaging in exploration activities. In other provinces, such as Saskatchewan, exploration activities do not initially need a

license, but one is required in order to stake a claim (i.e. acquire mineral rights). These licenses are typically subject to fees and disclosure of geological information. Holders of claims or mineral rights are required to do a certain amount of geological assessment to maintain their standing. To move to the mine development stage, the holder of a claim must seek a mineral lease from the relevant government agency.

Mineral taxation

Provincial governments typically levy a specific tax or royalty on mineral production, although the rates and structure of these taxes vary by province and by mineral type. In the 1970s, these royalties were raised significantly, and were often applied to measures of gross production. As a result, in British Columbia, for example, taxation of copper production reached effective rates of over 100 per cent of profits. Since then, however, mineral tax and royalty rates have been capped in most provinces between 10 and 20 per cent, depending on the mineral, and this rate is typically applied to measures of company income or profits, not mineral production. In other words, authorities calculated the value subject to taxes or royalties by taking total revenues and subtracting costs, including operating costs, depreciation allowances and other deductions. Profit-based taxation helps reduce the financial risks facing mining companies.

Both federal and provincial governments levy corporate income taxes. In 2009, the federal corporate income tax rate was 19 per cent. It will be gradually reduced to 15 per cent by 2012. Provincial income taxes add an additional 10 to 16 per cent. A range of tax deductions are available at the federal and provincial levels that take into account the special needs of the mining industry, particularly related to exploration activities. For example, the federal Canadian Exploration Expense allows exploration costs to be accumulated and carried forward to offset tax obligations when the mine goes into production. In some cases, foreign investors have

established exploration subsidiaries in order to make use of flow-through shares, provided they have taxable Canadian income against which to write off the exploration tax deduction.

International tax comparison studies carried out on mining tax regimes in the mid-1990s and mid-2000s (Brewer, 2005a, 2005b) showed that Canada was in the average range of global tax burdens. The studies found that some 25 to 35 per cent of profits were taken by corporate taxes, mining taxes and royalties together. Yet, generous tax incentives are often available. This is particularly the case in Quebec and Saskatchewan, which international mining investors ranked second and seventh respectively out of 72 jurisdictions (see table II.1).

Environmental and social regulations

Canada's mining policy adheres to the principle of sustainable development, as laid out in the *Mineral and Metal Policy of the Government of Canada* (NRCan, 1996). Key objectives of this policy include encouraging environmental best practices, respecting the needs and values of all resource users, maintaining the quality of life and environment for future generations, and securing the involvements and participation of stakeholders and communities in decision-making.

The federal and provincial governments have a range of general laws and regulations covering the release of toxins and contaminants into the air and water, endangered species, natural parks and wildlife protection. The key piece of legislation at the federal level is the Canadian Environmental Protection Act (CEPA), which was introduced in the late 1980s to comprehensively deal with environmental issues. It is informed by the Toxic Substance Management Policy, which provides a mechanism to assess the level of toxicity of a given substance under the CEPA.

More specific to mining, the federal government's 2002 Metal Mining Effluent Regulations limit the emission of deleterious substances above certain threshold concentrations, and create

requirements for environmental effects monitoring. It also addresses mine closure and emergency crisis management, such as the failing of a tailings dam. In 2009, Environment Canada went further and published an Environmental Code of Practice for Metal Mines. In addition, most provinces have legislation mandating companies to make preparations for mine closure and reclamation. These include requirements for detailed plans and assurances to the relevant government agency that financial resources will be available. Some mechanisms to ensure the latter include a requirement that companies maintain an investment-grade credit rating, or agreeing to post a security or deposit funds with a third party trustee.

EIAs are mandatory for most large-scale projects in Canada, although early exploration activities typically do not require them. EIAs for large projects that require comprehensive studies involve public consultations, which allow the voicing of community concerns. The process consists of a study identifying environmental risks and mitigation strategies, followed by an assessment by the review panel, and finally, a design and implementation programme that the project is to be bound by. Formerly, both levels of government carried out their own environmental assessments, a duplication and time-delay situation that was eventually addressed by intergovernmental harmonization agreements being signed to limit companies to a single review (box II.2).

Box II.2: Federal and provincial overlap in EIAs

Duplication of EIAs at the federal and provincial level has been a problem in the past, often leading to delays. The power to regulate the environment was not mentioned in the Canadian Constitution. As a consequence, both the federal and provincial governments have dedicated ministries, and both may call for an EIA, which must be approved prior to issuing the necessary permits for a mining project. This may help account for some of the negative perceptions of investors concerning regulatory duplication and uncertain environmental regulations in British Columbia and Ontario (see table II.1). To address these issues, seven provinces have entered into agreements with the federal government to cooperate in conducting EIAs.

While environmental regulations and EIAs are necessary to address the impact of mining projects, particularly during the construction and production phases, investors require them to be clear and relatively stable to allow for long-term planning. This has been a problem in some jurisdictions, such as Ontario and British Columbia, where uncertainty concerning environmental obligations is seen as a major deterrent to investment (see table II.1).

Competition with indigenous communities over land use constitutes one area that poses significant problems for mining companies operating in Canada. In situations where an indigenous community owns mineral rights, companies must negotiate to secure the title or lease, often resulting in the payment of royalties to the community, or the creation of an impact-benefit agreement (IBA) between the company and community. IBAs can include a variety of social, cultural, environmental and economic requirements for the project to meet, some of which may be quite costly to the mining company involved.

Problems for investors are more acute when a mining project is set to take place on an area with unsettled land claims. These typically stem from land treaties signed between indigenous communities and the British and colonial governments that were not incorporated into the national system of titles for land ownership. In these cases, a series of judicial decisions has clarified a legal obligation for companies to consult the community. However, companies often find the specifics of the obligation to be unclear. In addition, the capacity to consult and engage with indigenous communities varies significantly across firms. For example, a cash-poor junior mining company is unable to devote the same resources to community engagement as a large mining company. The lack of formal consultation mechanisms early on often result in the voicing of social grievances through EIAs, which increases the uncertainty faced by mining companies seeking approval for a project. Uncertainty surrounding indigenous land claims is a major problem in some Canadian jurisdictions, particularly in British Columbia and Northern Ontario (see table II.1).

C. Contributions and impacts of FDI

Foreign involvement in Canada's mining industry has taken the shape of both greenfield and M&As, with the latter being dominant over the past decade. This section examines the contributions and effects of these types of FDI along several dimensions. Although direct data for foreign and domestic firms are limited, evidence suggests that FDI has had a net positive impact (table II.2).

Table II.2: Summary of contributions and impact of FDI in Canadian mining industry

Investment, production and employment	- Translation of domestic exploration efforts into mine project development - Provision of finance to large Canadian firms through minority equity positions - Foreign mining companies have higher operating profits than domestic firms on average - Some restructuring resulting in reduced employment in refining and processing - Significant contributions to local employment through greenfield projects in Northern regions
Government revenues	- Higher royalty and income tax contributions from foreign companies due to higher operating profits
Local enterprise development	- Some access to new markets through global TNC networks - A shift of resources from former senior Canadian firms into start-up juniors - Reinforcement of Canada's role as hub for international mining finance
Environment and social impact	- Comply with advanced Canadian legislation - Foreign investors are active members of national private sector associations with mandatory and voluntary corporate social responsibility (CSR) frameworks

In addition to focusing on FDI, this section also looks at the economic, environmental and social effects of mining activities in general, and particularly how the different levels of government in Canada have addressed them. Policies in Canada have generally optimized the impact of FDI on production, employment, tax revenues, local business development, and the environment. Foreign mining projects have also made notable contributions to indigenous communities in Canada, yet some challenges remain in this area.

Investment, production and employment

The mining industry and its downstream activities, including refining, smelting and other primary mineral manufacturing, make a strong contribution to the Canadian economy. Between 2000 and 2008, the value of non-fuel mineral production more than doubled to $38 billion. In 2008, the contribution of direct mining activities to real GDP (including coal, but excluding oil and gas) was C$9.4 billion, or 0.8 per cent (MAC, 2009: 7-10). The contribution of downstream mineral manufacturing and processing was larger, at C$30.9 billion (2.5 per cent of GDP).

As a capital-intensive industry, employment in mining is less than proportional to the industry's output, although it remains important in mining regions. In 2008, employment in mineral exploration and extraction reached 58,500, or 0.4 per cent of total employment. This is up from 45,800 in 2004. However, when downstream processing and manufacturing is included, the figure grows to 351,000 in 2008 (or 2.4 per cent of total employment), although this is down from a high of 401,000 in 2000. Most of the losses in recent years have been in primary metal manufacturing, such as smelting and refining, where employment dropped from 104,000 in 2000, to 69,000 in 2008. The MAC (2009) attributes this primarily to restructuring resulting from technological advancements and foreign competition.

The contribution of FDI to overall mining investment, production and employment has come in several forms. Greenfield investments tend to have the most visible economic benefits,

particularly in remote regions where mining activities are major sources of local economic activity and employment. FDI inflows through M&As can play a similar role when they involve the purchase and expansion of junior firms. By identifying potential deposits "in the ground", Canadian prospectors and exploration companies create opportunities for large-scale investment. They then sell all or part of a claim to larger companies that provide financing for further exploration or mine development. Although domestic companies may be able to fulfill this function, by expanding the market of potential buyers to include foreign investors, Canadian junior firms can secure higher prices for their assets. The expansion of the diamond industry in the Northwest Territories has relied to a large extent on foreign investors purchasing and capitalizing junior exploration companies with promising discoveries (box II.3).

Box II.3: FDI and diamond mining in Canada's North

Since the early 1990s, FDI has been driving the development of a lucrative diamond industry in Canada's North. In 1991, two Canadian geologists from Diamet Minerals Ltd. discovered a significant diamond deposit at Ekati in the Northwest Territories. After claiming the ground, an 80 per cent stake in the project was sold to BHP (now BHP Billiton). The Ekati mine began production in 1998. Soon after the Ekati discovery, another Canadian junior company, Aber Resources, founded the Diavik mine nearby. To develop it, it partnered with RioTinto (which took a 60 per cent stake) – leading to Aber's downstream purchase of Harry Winston Diamonds in New York as an outlet for Canadian diamonds. Diavik and Ekati are widely regarded as two of the richest diamond mines in the world. De Beers is another foreign investor who has been active in the Canadian diamond sector. Present in Canada since the 1960s, the company iscurrently working on some 30 exploration projects ranging from grassroots exploration to feasibility studies. The Snap Lake Project in the Northwest Territories and Victor Project in Northern Ontario are De Beers' first diamond mines outside of Africa.

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Box II.3 (concluded)

Mining activities in these remote regions have helped boost economic activity and employment. Some 50 per cent of totalcapital and operating expenditures of these mines have been sourced in the surrounding region, half of which were sourced through business partnerships with indigenous communities. The costs to build the mines were high: Ekati cost C$900 million, Diavik C$1.3 billion, while Snap Lake and Victor were also around C$1 billion each. Since 1991, the Northwest Territories' GDP rose from C$1.6 billion to C$4.5 billion in 2007, while unemployment dropped from 13 to 5.4 per cent.

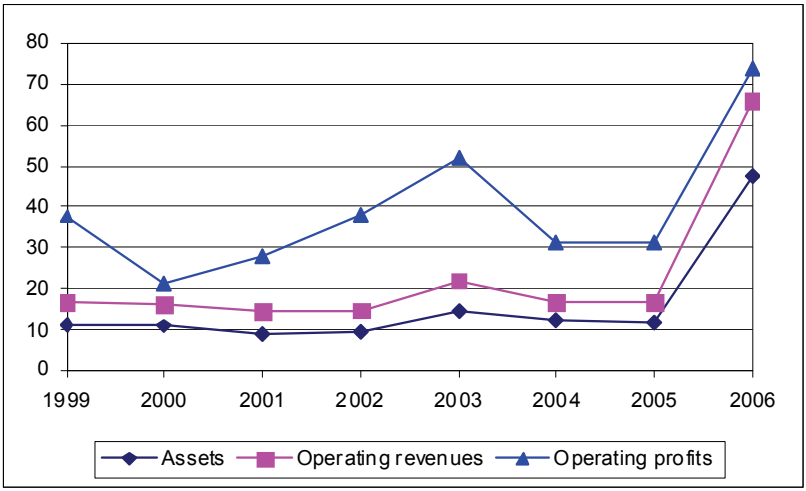
Aside from junior exploration firms, some larger Canadian mining companies have benefited from foreign investors purchasing a minority stake in their operations. This has represented an important source of finance since the global financial crisis in 2008. For example, in July 2009, Teck Resources Ltd sold a stake in the company to China Investment Corporation (CIC) in a C$1.7 billion all-cash deal. Teck Resources said CIC had agreed to take a roughly 17.2 per cent equity stake and 6.7 per cent voting interest in Teck. CIC agreed to hold the shares for at least one year. The Chinese fund said this lock-up period was consistent with its strategy as a long-term investor. From Teck's point of view, the Chinese investment was critical to put the company back on a sound financial footing after the crisis.

Although most M&As clearly help finance industry investment, transactions involving the purchase of senior Canadian mining companies have had less obvious benefits. Most notable are the acquisitions of Inco, Noranda/Falconbridge and Alcan in 2006. In these cases, the purchasing companies have made cutbacks to both investment and employment.[8] Since 2007, Rio Tinto has postponed investments to build and upgrade smelters, closed smelters in Quebec, cut 300 jobs, and reduced its head office employment by 18 per cent. In 2009, Xstrata cut 700 jobs from its Sudbury operations and closed some nickel mines. That same year, Vale cut 463 jobs.

Although these cutbacks have become controversial, their significance can be questioned. Considering the companies' large share of industry employment, the job cuts have been relatively mild.[9] Moreover, reductions in investment and employment were likely to occur even if the companies' operations had remained domestically owned. Most of the cuts were motivated by falling mineral prices following the financial crisis in 2008. A study by the Mining Industry Human Resources Council found that more than 6,400 mining jobs in both domestic and foreign owned companies were eliminated across the country between November 2008 and January 2009.

There is also evidence to suggest that foreign-controlled mining companies have better financial performance than their domestic counterparts. As shown in figure II.2, the share of industry operating profits generated by foreign affiliates has consistently exceeded their share of total assets and revenues. The acquisition of domestic mining companies by more efficient foreign firms improves industry productivity, freeing up resources for additional investments in explorations and mine development.

Figure II.2: Foreign ownership in mining and quarrying (per cent of industry total)

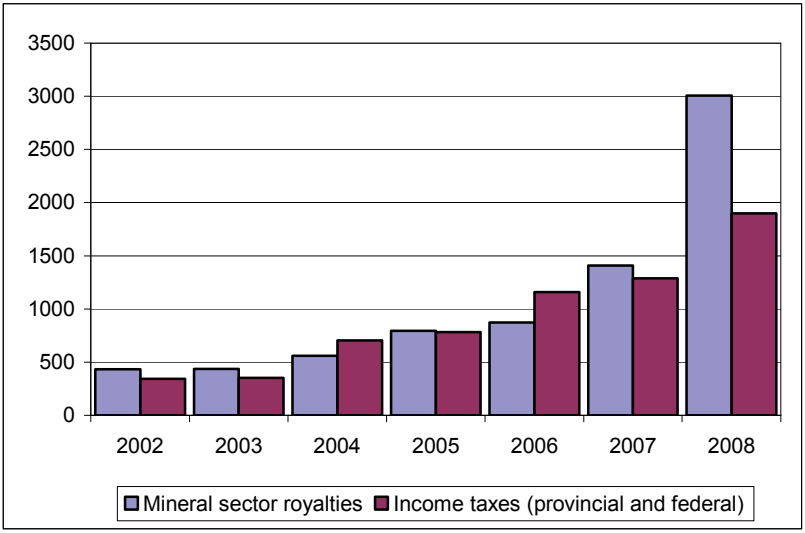


Source: Statistics Canada (2010).

Government revenues

With rising commodity prices until 2008, the federal and provincial governments have seen the total of royalty and tax revenues from mining companies increase significantly, up to nearly C$5 billion in 2008 (figure II.3). The structure of Canada's mineral taxation is also apparent. Since mining taxes and royalties are primarily based on profits, including income taxes and royalties, tax revenues have risen in line with company profits. The contribution of FDI to government tax revenues has been strong. Since foreign companies have higher rates of pre-tax profits than their domestic counterparts, they have presumably contributed a larger share of their sales to government tax revenues.

Figure II.3: Tax revenues from mining industry - 2002-2008 (C$ millions)



Source: ENTRANS (2009).

As noted, an attraction of the Canadian system of mining taxation to potential investors is that provincial mineral royalties have been converted largely to profit-based taxes, especially when it comes to base metals and gold. These minerals make up the bulk of Canadian mining activities. Historically, they were not extremely profitable and excessive rent was not present. When rent is present during times of high prices, the profit-based tax system is adequate to ensure that the State captures a fair share. Thus, these specific tax and royalty rates have not required significant adjustments.

In contrast to gold and base metals, potash, uranium, and diamond production in Canada are typically based on high-grade deposits. Governments have judged that these are sufficiently profitable to justify higher effective tax rates for companies mining these minerals. For example, to address the growing diamond industry in Ontario, in 2007 the government created a separate

royalty regime. Whereas the province's Mining Tax Act sets a general mineral tax at 10 per cent of profits (in addition to corporate income taxes), the specific diamond royalty would be up to 13 per cent.[10] Other instruments used by governments in Canada to address high-grade deposits include basic gross royalties on sales revenue, tiered royalties which increase with product price, and graduated tax rates. By attempting to capture a share of so-called excessive mineral rents, the government seeks to balance between making the host jurisdiction attractive to mining investment and obtaining a fair share of rent for the state. However, using such complicated measures increases the complexity of the rules and regulations, the intricacy of the formulae, and the required administrative bureaucracy.

Parallel taxation by the provincial and federal governments in the Canadian context has occasionally raised distributional issues. Since provincial tax measures can affect federal tax revenues, mechanisms have been developed to coordinate policies in this area (box II.4).

Box II.4: Federal-provincial revenue sharing

In terms of revenue distribution, Canada is in the fortunate situation of having the basic rules of intergovernmental revenue-sharing incorporated in the Constitution. Provinces own the minerals inside their borders, and they have power to levy direct taxation on them. Each province can decide how intensely to tax minerals in its jurisdiction and how to fund minerals and mining expenditure programmes - as well as fund other programmes for which provinces were given responsibility in the Constitution, such as health, education and welfare. The federal government acts as a "province" government acts as a "province" in taxing minerals in offshore and Canada Lands north of 60 degrees latitude.

Despite these clear delineations, some tensions between the two levels of government remain on this issue. In the 1970s, provinces often had much higher royalty rates than today. Since, at the time, provincial royalties were deductible expenditures when calculating mining companies' federal

/…

Box II.4 (concluded)

income taxes, the federal government saw its corporate income tax revenues from mining companies decline. To address this problem, the federal government abandoned the deductibility provision and introduced a "Resource Allowance", which would guarantee that a portion of "resource profits" were taxed by the federal government. Provincial governments would then decide how much to tax the remaining share. Some provinces taxed more than the resource allowance and some less, depending on the provincial assessment of the economic situation facing them and their mining industries.

In place for some 30 years, the Resource Allowance was eliminated in 2006. The federal government has now returned to treating provincial royalties as deductions in the calculation of federal income taxes. The reasons for this include disagreements between companies and taxing authorities on how to define "resource profits", as well as lower provincial royalty rates and higher mineral prices, which have largely eliminated the problem of excessive provincial taxation.

A budding trend in Canada is the creation of mechanisms to share mineral revenues with indigenous communities, even in cases where minerals deposits are nominally owned by the state. For example, in early 2010, the provincial government of British Colombia announced an agreement with two indigenous communities to share its revenues from a new gold and copper mine in the province. Similar agreements by British Columbia and other provincial governments are expected in the future. The initiative is strongly supported by the mining industry, which sees it as an effective measure to improve perceptions of mineral development among indigenous peoples. The direct allocation of government revenues complements the current use of private IBAs by companies and communities to ensure an adequate distribution of the costs and benefits associated with mining activities (see below).

Domestic enterprise development

With the presence of well-established mining activities, geographically focused clusters of associated industries have tended to develop naturally in Canada. Companies have an incentive to work with educational and research institutions to increase innovation and develop a strong local skills base, and they also benefit from establishing relationships with reliable local suppliers. For example, the historically important nickel mining centre of Sudbury in Ontario is home to Laurentian University, a technical college, and the Northern Centre for Advanced Technology (NORCAT), which is involved in occupational health and safety training, mine training, technology innovation and commercialization, contractor training, and eLearning. Large mining companies and local suppliers carry out research there, and it has received donations from major foreign investors, including Vale and Xstrata. A 2010 study commissioned by the Ontario North Economic Development Corporation estimated that Sudbury-based suppliers of goods and services to the mining industry have an annual output of C$3.94 billion and employ 13,800 workers. Outside mining regions, cities such as Toronto, Vancouver and Montreal have clusters of firms involved in providing professional services to the industry, such as investment houses, mining analysts, and specialized accounting, legal, and taxation advisory services. Overall, the Mining Association of Canada (MAC) (2009) estimates that there are around 3,100 firms that supply the mining industry Canada-wide.

The federal and provincial governments have helped facilitate these types of clusters, primarily through the provision of resources or encouragement of activities that take the form of public goods, such as information, infrastructure, skills development, and other industrial services.[11] In the early 1980s, Energy, Mines and Resources (1982) commissioned a report outlining potential measures to link major mining projects with local equipment manufacturers, and ways to use public research and development (R&D) or incentives to stimulate innovation among the latter.

Although many of the suggestions were not implemented, the federal government has maintained several agencies related to R&D in the mining industry, including the Canada Centre for Mineral and Energy Technology (CANMET), Geomatics Canada, and the Geological Survey of Canada. At the provincial and territorial level, nearly every jurisdiction in Canada has a strategy to encourage the development of mining and supporting industries. Of the major mining regions, Ontario, British Columbia, and Quebec currently have "stand-alone" strategies, in that they are not merely part of the provinces' broader innovation strategies (CMIC, 2008: 1-3). For example, the Ontario government has created the Ontario Mineral Industry Cluster Council, consisting of representatives from the mining industry, academia and government. This group meets regularly to collaborate, exchange ideas, and promote competition and economic development.

The existence of well functioning stock exchanges has been critical to the success of Canada's mineral and supporting industries. The exchange of secondary stock on stock exchanges needs a constant supply of new issuances, and this has been facilitated in Canada through taxation measures. The 1983 amendment to the flow-through shares legislation (see section II.B) made exploration expenses deductible against any income (including personal), rather than only against resource income. This provided for the rapid growth of financing for exploration in Canada. The subsequent strong growth in the junior exploration sector represented the development of a group of domestic investors acclimatised to investing in mineral development across the country, and provided a burst of exploration funding that continued into subsequent years.

Toronto, Vancouver and Montreal became centres of deal-making and financing for the exploration and mining industry, and flow-through tax vehicles were a major driver. It was common after the mid-1980s to see limited partnerships assemble up to C$100 million to finance mineral exploration, where the sponsors were funding around 40 promising junior exploration companies as a way

to spread the risk for the many ordinary Canadians who were new investors in mineral resources. Today, Canada remains a centre for equity finance in the global mining industry. In 2008, 55 per cent of the world's public mining companies were listed on the Toronto Stock Exchange (TSX). From 2004 to 2008, it was the scene of $45 billion worth of mining financings, or 31 per cent of the world total (MAC, 2009: 24).

The strong development of Canada's domestic mining industry, and associated financial and other professional services, have made it an ideal location from which to invest in the mining industries of other countries. Canadian mining companies operate in more than one hundred countries, and in 2008 held an FDI stock of around $21 billion.[12] Of the 9,300 or so mineral projects owned by companies listed on the TSX, 49 per cent are located outside of Canada (MAC, 2009: 24, 26). Canadian firms are responsible for the largest share of exploration expenditures in Canada, the United States, Latin America, Europe and Africa. Outward mining investment also presents significant opportunities for upstream activities. Although their mining operations may be located abroad, Canadian-based head office activities and financings continue to provide fees for professional and financial services firms in Canada's major cities. Many suppliers of goods in Canada's mining clusters have actually never supplied mining companies operating domestically, focusing instead on supplying operations abroad. Their efforts are facilitated by the work of Canadian embassies, which provide specialized advisory services to Canadian mining firms in key jurisdictions, such as Mexico and Chile.

Despite the successful development and internationalization of Canada's mining and supporting industries, popular commentators have argued that the recent takeovers of senior Canadian firms will undermine this position.[13] One major concern is that a rationalization of the acquiring firm's global operations will result in a broad reduction of economic activities associated with the Canadian mining industry. These include the loss of corporate headquarters and a shift towards the use of foreign refineries instead

of those located in Canada, both of which may be expected to reduce the demand for goods and services from Canadian supplier firms. As noted above, there is some evidence of that Vale, Xstrata and Rio Tinto have reduced employment at the head offices of the formerly Canadian firms or put on hold plans to invest and upgrade refineries and smelters, particularly since the financial crisis.

Yet there are three reasons to believe that the transfer of ownership of these companies to foreign TNCs will not significantly undermine Canada's mining clusters. First, Vale, Xstrata and Rio Tinto hold significantly more global assets than their formerly Canadian-owned subsidiaries, meaning that established Canadian mining suppliers may be exposed to new marketing opportunities. The Canadian government, through Export Development Canada (EDC), has sought to encourage these activities, recently approving financing of up to $1 billion for Vale's operations in Canada and abroad with the understanding that they will encourage the use of Canadian suppliers in their global operations. Canada already has some positive experience with this approach. For example, EDC has provided finance to the National Copper Corporation of Chile (CODELCO), which helped increase the company's use of Canadian suppliers from five to 80 firms.

Second, Canada's significant remaining mining firms continue to grow in numbers and size. As noted, Canadian companies remain world leaders in exploration, with thousands of flexible junior firms holding exploration assets around the world. These firms continue to rely on Canadian suppliers of specialized exploration equipment, as well as Canadian equity markets and professional service firms. This suggests that Canada's domestic mining industry may be experiencing a shift in specialization towards exploration and supporting activities, and away from large-scale mineral production, where a few long-established global mining TNCs enjoy significant economies of scale. On the other hand, however, many senior Canadian firms have been on the buying end of global consolidation trends. Companies such as

Barrick Gold, Teck Resources, Kinross Gold and Yamana Gold have expanded significantly, having made a number of important acquisitions along the way, both of Canadian and foreign firms. These trends challenge the view that the Canadian mining industry is being "hollowed out" by foreign acquisitions.

Third, these growing junior and senior Canadian-owned firms have the potential to absorb some of the resources that may have been displaced due to the acquisitions of Inco, Noranda/Falconbridge and Alcan. These companies were sold at the top of a commodity price cycle, ensuring that shareholders received significant capital gains which could then be reinvested in other parts of the Canadian mining industry. The case of Royal Nickel, which was founded by former Inco management, is an example of how some of the management expertise associated with the company was redirected towards the growth of a competitive junior firm.

Environmental impact

Since the 1980s, the environmental performance of the Canadian mining industry has been consistently improving.[14] Most notable has been a major decline in the release of toxic substances into the air and water. By 2007, the annual release of arsenic, cadmium, copper, hydrogen sulphide, lead, mercury, nickel and zinc had declined by between 60 to 93 per cent, when compared to base years in the late 1980s and early 1990s (MAC 2009: 43). Progress has also been made in the area of mine closure. In the past, mines often shut down with little effort to clean-up waste or reclaim the land. Recently, however, mining companies, including foreign investors, have been proactively addressing these issues. For example, DeBeers worked with Sudbury's Laurentian University prior to opening its Snap Lake and Victor mines, in order to construct closure plans that would re-establish local vegetation and species.

Government policies at the federal and provincial levels have underpinned theses improvements. The use of EIAs has

prevented certain mining projects deemed to be too harmful, and has tried to minimize the negative effects of approved projects. As mentioned in Section II.B, environmental legislation and regulations at both levels of government have progressively set more stringent limits on the release of substances, and specifically in the mining industry. These regulations have also increased the legal obligations of companies regarding mine closure.

The regulatory process in Canada has involved significant input from the industry, which possesses specialized knowledge of its activities. This process also allows companies, stakeholders and the government to identify areas of potential improvement that do not require hard legal measures. For example, the industry has cooperated with government ministries (e.g. Natural Resources Canada and Environment Canada) and other stakeholders in a series of initiatives to limit pollution from mining activities, including the Mine Environment Neutral Drainage programme and the Accelerated Reduction/Elimination of Toxins programme. Another multi-stakeholder initiative involving the mining industry, known as the National Orphaned and Abandoned Mine Initiative, created a fund to cleanup abandoned mine sites, which plague certain regions and have been estimated to require up to $C4 billion in cleanup costs.

Over the past two decades, Canada's national mining associations have been developing frameworks for their members that include principles and guidelines on environmental and social practices. Much of the substance of these guidelines goes beyond the legal requirements of Canadian mining jurisdictions. Self-regulation is driven by a desire to improve the image of the mining industry in Canada, and by extension, to create a mining-friendly policy consensus. In the late 1980s, the MAC was one of the first national mining associations in the world to adopt an explicit environmental policy, containing a set of suggested environmental reporting standards for their members. In the 1990s, the MAC used stakeholder consultations, including the WMI, to help develop a

comprehensive sustainability program that included various performance indicators. The programme, entitled Towards Sustainable Mining (TSM), was released in 2004, and includes indicators related to tailing management, greenhouse gas emissions, community outreach, and crisis management planning. The reporting requirements are mandatory and verified for all members of the association, which includes the vast majority of senior mining companies operating in Canada. Canada's other major industry association, the Prospectors and Developers Association of Canada (PDAC), whose membership is made up primarily of junior exploration firms, also maintains a framework for its members called e3 Plus. This framework does not contain obligations for members, and instead focuses on building the capacity of smaller firms to deal with environmental problems and community relations.

The entry of foreign mining TNCs has the potential to affect environmental outcomes in Canada, due to the importance of internal company policies. Foreign companies with superior practices would improve industry performance, while those with inferior practices could undermine some of the progress achieved so far. While all foreign companies must comply with Canadian legislation and regulations, some may opt to ignore the voluntary initiatives taking place throughout the industry. One way that this challenge has been addressed is by involving the foreign affiliates in the national mining associations. For example, the Canadian subsidiaries of Vale, Xstrata and Rio Tinto are all part of the MAC, and thus subject to its mandatory TSM framework. Moreover, as some of the largest mining TNCs in the world, they are members of the International Council on Mining and Minerals (ICMM), an organization with its own set of international best practices for members companies.

Social impact

Canada's mineral policy stance seeks to protect local communities from detrimental aspects of mining. One of the most significant issues in this area relates to the impact of mining

activities on indigenous peoples. Opinions among indigenous communities in Canada vary on whether to allow mining activity on their lands. At one extreme is a view that mining could destroy the environment, social fabric, and indigenous culture. At the other end is the view that poverty issues are paramount and that socially sustainable development offered by mining should be seized if it is available. Rather than choosing one view or the other, the objective should be to create mechanisms that protect indigenous rights and allow them to have a voice in mining projects that affect their communities.

As noted, in cases where an indigenous community has clear ownership over a mineral deposit, or has a potential land claim over the surface area, companies often negotiate a private, legally enforceable IBA with the community, stipulating general and specific terms for the mining project. By 2009 there were some 170 IBAs across Canada, ranging from a Memorandum of Understanding to formalize the working relationship to comprehensive IBAs, where mining activities provide the opportunity and funding for training of individuals and support of indigenous businesses (see box II.5). In addition to legal requirements stipulating consultation with indigenous communities in certain cases, the impetus for these agreements also comes from the national private mining associations, which have strongly endorsed the use of IBAs. PDAC and the MAC have each signed agreements with the indigenous Assembly of First Nations, challenging companies to create jobs and alleviate poverty. Moreover, their self-regulatory frameworks provide guidelines for their members on how to effectively incorporate local and indigenous communities into the decision-making process.

Box II.5: The use of IBAs to manage the impact of mining on indigenous communities

A positive example of the use of IBAs comes from the case of Diavik Diamond Mines, which is owned by Rio Tinto. Located in a part of the Northwest Territories where 40 per cent of the population is of indigenous decent, the company has signed a variety of agreements with local communities, driven by both its internal CSR policy, and by regulatory developments aimed at increasing the involvement of indigenous peoples in resource governance. These agreements cover training, employment and business opportunities, and ongoing monitoring of positive and negative impacts.

By 2006, six years after the commencement of the project, Diavik has made over C$1 billion in purchases from indigenous businesses. Indigenous employees made up 33 per cent of the company's workforce, although this was still below the target rate of 40 per cent. Many of the workers entered the company with entry-level or semi-skilled positions, but apprenticeships and professional development programs have focused on upgrading their skills. Success of the initiative is partly attributed to early community consultations, which began at a very early stage during the exploration phase in the mid-1990s, and has involved over 300 meetings.

Source: Wise and Shtylla (2007: 39-40).

To assist indigenous communities in negotiating IBAs with mining companies, which often possess more information, experience and general bargaining power, the government has created a mining information kit. It raises awareness of legal specificities and provides a checklist of issues for consideration during consultation and negotiations. The website of Natural Resources Canada describes the kit as being designed to "*help Aboriginal [indigenous] communities better understand the mining cycle and to identify the many opportunities that mining can bring to communities.*"

Aside from IBAs, indigenous communities can also influence the terms of major mining projects through their participation in special environmental agreements with the government and project developers (O'Faircheallaigh, 2007). These agreements are often recommended by EIAs to ensure the involvement of indigenous communities in EIA follow-up. The agreements give legal standing to communities to voice complaints about the implementation of environmental commitments over the lifetime of the project. They may also play a role in monitoring compliance, for example, by having representatives on a monitoring board.

Despite progress made since the mid-1990s, there remain many critics of Canada's policies towards the relationship between mining and indigenous communities (e.g. Hipwell *et al.* 2002; Sosa and Keenan, 2001). One of the most significant problems is that indigenous involvement in mineral development continues to predominantly rely on private agreements between companies and communities. While these contracts are legally enforceable, the consultations and negotiations have limited government supervision to ensure protection of indigenous communities. Canada has not signed the ILO Agreement 169 on Indigenous Peoples, which would give it stronger obligations in this realm.

To address some of these criticisms, the Canadian government has started to focus on its own duties towards indigenous communities when a project is seeking federal approval. According to the 2007 Action Plan to Consult First Nation, Métis and Inuit Groups, no single department or agency has been responsible for coordinating a federal approach. Consequently, the Plan includes: discussions with indigenous groups, provinces and territories, and industry to develop consensus; the development of a federal policy on consultation; better interdepartmental coordination; and the creation of an inventory on the location and nature of established and potential indigenous land rights. At the provincial level, some jurisdictions, including Ontario, have been

developing comprehensive frameworks of their own (box II.6). Although they may impose additional regulatory requirements for mineral development, clear and stable frameworks formalizing consultation procedures and indigenous land rights can also benefit investors, who continue to face significant uncertainty in this realm.

Box II.6: Modernizing Ontario's Mining Act to incorporate community issues

In late 2009, the provincial government amended the Ontario Mining Act in an effort to "modernize" their mineral legislation. One of the main objectives of the legislation is to reduce conflicts and disputes between the industry and private and indigenous landowners that do not own the sub-surface (i.e., mineral) rights on their properties. The prevailing model in Ontario allowed any individual with a prospector's license to stake a claim and acquire exploration rights from the government over a certain territory, even if the surface rights are held privately. The amendments and following regulations include:

- Inserting a statement in the Act's purpose that recognizes and affirms indigenous and treaty rights.

- Withdrawing government mineral rights from various tracts of private and indigenous land and cultural sites, and allowing landowners in other areas to apply to have them withdrawn.

- In cases where a mineral claim has been staked on an area with private or indigenous surface rights, landowners will be notified of the claim.

- Requiring prospectors to submit detailed exploration plans and, in some cases, acquire permits from the Ministry of Northern Development and Mines prior to the commencement of exploration activities on private lands.

- Prohibiting new mine openings in the province's northern regions without prior approval of a community land use plan.

- Introducing dispute-resolution process for indigenous-related mining issues, particularly related to community consultation, exploration permits, and the filing of closure plans.

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Box II.6 (concluded)

- Developing a mandatory "prospectors awareness program" for holders of prospectors licences. This will address issues related to indigenous engagement and consultation, reclamation of exploration sites, and the rules for staking claims on private lands.

- Creating a map-based staking system, precluding the need to make physical stakes on private or indigenous land

The new amendments resulted from consultations involving over 1,000 diverse stakeholders and over 200 written submissions. They are supported by a number of indigenous groups, as well as the provincial mining industry associations, which see them as a way of clarifying the regime for investors.

Sourc: *An Act to amend the Ontario Mining Act*; Ministry of Northern Development and Mines.

Notes

[1] See, for example, Udd (2000) and Cranstone (2002) for a history of mining in Canada.
[2] UNCTAD TNC/FDI Database.
[3] This was initially set generally at C$50 million. The threshold for review varies according to whether the home country is a member of the World Trade Organization (WTO), and also differs for American investors due to the country's membership in the North American Free Trade Agreement (NAFTA). In the 2009 Budget, the Canadian government outlined amendments to the ICA that would see the capital value threshold for review raised to C$1 billion over the subsequent five years.
[4] The factors used to assess net benefits are outlined in Section 20 of the ICA and include: effects on the level and nature of economic activity in Canada; degree and significance of participation by Canadians in the business; effect of investment on productivity, industrial efficiency, technological development, product innovation and product variety in

Canada; effects on competition within the relevant industry; the compatibility with national industrial, economic and cultural policies; and the contribution to Canada's competitiveness in international markets.

[5] Hoffman, Andy. "Broken promises mark foreign mining deals." *The Globe and Mail*. 4 October 2010.

[6] A couple of reasons have been cited in the media for blocking the takeover. These include the company's strategic control over 25 per cent of global potash supply and the important role the company plays in government revenues (up to 15 per cent of Saskatchewan's public budget).

[7] Although mineral ownership could in principle be granted to private persons, the provincial and federal governments have been careful to ensure that the sale of Crown land has excluded any rights to mineral deposits in the ground. The majority of existing mining titles have been purchased or leased from the Crown.

[8] Hoffman, Andy. October 5, 2010.

[9] In 2008, Rio Tinto employed 64,700 workers, while Xstrata and Vale Inco employed 14,500 and 11,700, respectively (MAC, 2009: 35)

[10] Initially, the main target of this tax, DeBeers, was not consulted on this change, prompting it to express concerns about tax stability. However, the Ontario Government has since entered into discussions with the company and has agreed to a slightly lower top marginal rate.

[11] For example, firms may be reluctant to train local workers if they believe these workers may then work for another company, despite this being beneficial to the industry as a whole. Thus, there is a strong argument for government subsidization or provision of specialized training services.

[12] UNCTAD TNC/FDI database

[13] Simpson, Jeffrey. "We've sold off assets so often, branch plants 'R' us." *The Globe and Mail.* March 8, 2010.

[14] The environmental performance of non-fuel companies, including tar sands operations, is not considered here.

III. FDI in mining – the Chilean experience

A. Industry background and FDI trends

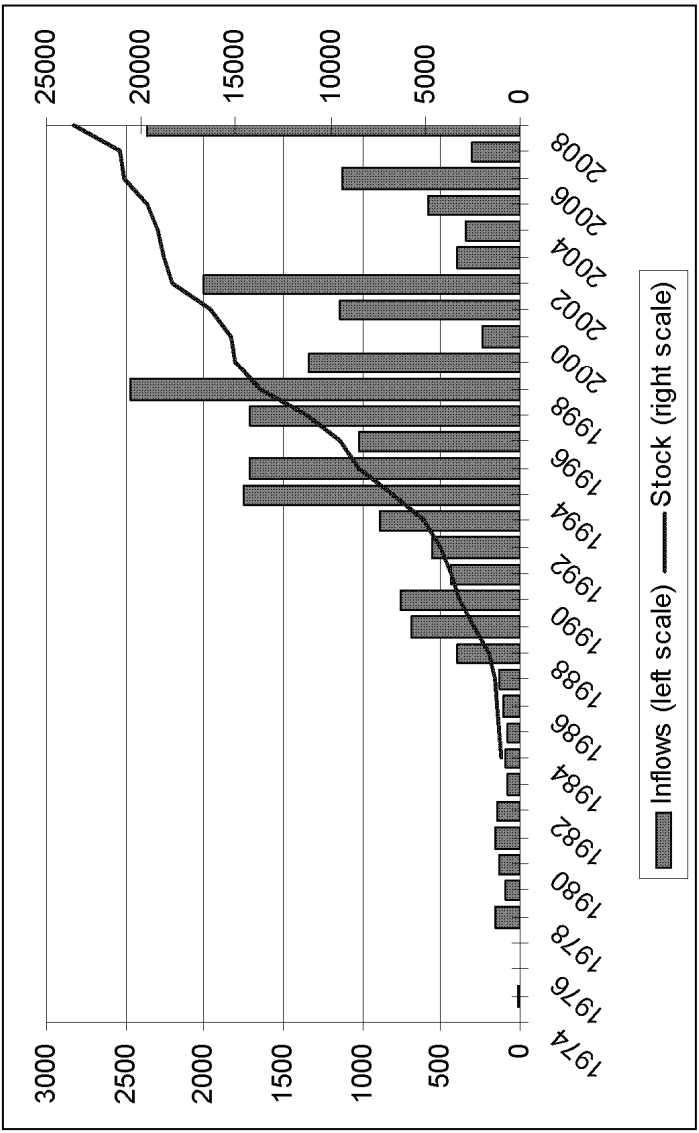
By the end of the 19th century, mining had claimed a leading role in Chile's economy, mainly with the production of silver, gold, and particularly copper. By the mid-twentieth century, Chile secured its position as a leading copper producer in world markets. Between 1900 and 1973, copper production increased on average by 70 per cent per decade. Production slowed between 1973 and 1982, but more than tripled from 1982 to 2007 (Wagner and Diaz, 2008; COCHILCO, 2009). Other minerals have been important in the Chilean context, although not to the same extent as copper. These include molybdenum, gold, lithium, iron ore, and several non-metallic minerals, such as iodine and nitrates. In some cases, these minerals are extracted as a by-product of copper mining. In 2008, total mine production was $29.8 billion, equivalent to 17.6 per cent of GDP (see table I.1).

Foreign capital has played a major role in the development of the Chilean mining industry, both historically and today. In the 19th century, British entrepreneurs were among the first to invest in the country's nitrate deposits. American investment, through TNCs such as Anaconda and the Guggenheim Group, were the primary driver of copper production in the early and mid-twentieth century. Yet, by the 1970s, dissatisfaction with the economic contributions of the foreign copper companies resulted in a constitutional amendment authorizing the nationalization of major copper TNCs operating in Chile. This situation virtually froze the entry of new foreign capital and technology. In 1976, the assets of the nationalized firms were transferred to state-owned CODELCO. CODELCO became the largest copper producer in the world; a position it continues to occupy today. Nationalist forces within the military government (1973-1990) had supported this initiative, yet influential liberals were calling for a rival development model, one based on market forces and foreign investment. Although

CODELCO would remain under state control,1 the military government introduced legislation to allow parallel foreign investment in the mining industry.

Inward FDI trends in the Chile mining industry show limited flows beginning in the late 1970s, after the passage of new foreign investment legislation (Figure III.1). Inflows increased by the late 1980s, but FDI grew most quickly during the mid-1990s, reaching a 1998 peak of $2.5 billion. Since then, flows have become more volatile. Although the rapid accumulation of FDI experienced during the 1990s has slowed somewhat, Chile's stock of FDI in mining ($23.5 billion) remains one of the highest in the world. A number of the world's largest mining TNCs have become prominent players in Chile, along with many smaller foreign-owned firms. Together, foreign affiliates account for a majority of mineral production in Chile (see table I.1). Aside from CODELCO, important local firms include public companies such as Antofagasta, Molymet and SQM. There are also many smaller, locally owned mining companies currently operating in Chile.

Figure III.1: Inflows and stock of FDI in mining in Chile - 1974 to 2008 ($US million)



B. Attracting FDI in mining

Table III.1 shows how Chile compares with other major mining jurisdictions in terms of investment attractiveness. Overall, Chile is among the most attractive locations for mining investment in the world, with strong performance across most indicators. A more detailed analysis is provided below.

Table III.1: Key factors in Chile's mining investment climate, 2010

Supply factors	Mineral potential assuming no regulation and land restrictions	5
	Geological database	29
	Infrastructure	31
	Availability of labour/skills	21
Policy and institutional framework	Political stability	25
	Uncertainty concerning the administration, interpretation, and enforcement of existing regulations	6
	Regulatory duplication and inconsistencies	5
	Taxation regime	5
	Uncertainty concerning environmental regulations	10
	Uncertainty concerning native land claims	9

Source: McMahon and Cervantes (2010)
Note: Based on survey of 672 representatives of mining companies around the world, ranking 72 jurisdictions worldwide.

Supply factors

Chile has around a third of the world's copper reserves and significant reserves of other minerals such as molybdenum, lithium, nitrates and iodine. Exploration has been extensive in the past three decades (registering the highest level of exploration investment in the world in 1997). Major reasons for this trend were the quality of pre-existing copper reserves, and the limited taxation of mineral revenues which ensured that companies would capture a very large

share of mineral rents if a deposit was discovered. Recent discoveries, especially in the vicinity of large deposits as Escondida, Collahuasi, Sierra Gorda and in the district of Andina - Los Bronces, show that the geological potential of the country remains strong. This is confirmed by international mining investors, which ranked Chile fifth out of 72 jurisdictions in terms of pure mineral potential (see table III.1).

However, the quality of and access to Chile's geological information needs to be improved, notably through the activities of the Public Geological Service (Sernageomin). This is particularly important in light of recent trends for the government to secure a higher share of mineral rents, which could limit the incentive for private exploration.[2] Sernageomin's budget is currently low relative to that of equivalent services in other mining countries. Moreover, although Sernageomin is entitled under Article 21 of the Mining Code to collect geological information generated by enterprises, this regulation is typically not enforced due to the lack of clear regulation and procedures. These limitations result in the waste of valuable data that could be used by potential investors.

The state of physical infrastructure in Chile is mixed. On the one hand, many stakeholders recognize Chile's transportation infrastructure as a positive factor contributing to the attractiveness of the country as a destination for foreign investment. Roads, ports and airports have improved their standards in recent decades as a result of strong public and private investment, resulting in the expansion of many transport services relevant for mining activities. On the other hand, access to water is becoming problematic, as mining tends to take place in the dry climate of Northern Chile. This has prompted the government to look for other water sources, as well as ways to generate the electricity necessary to develop and operate them. As a result of these challenges, overall infrastructure provision can be seen as a relative weak point in Chile's mining investment climate (see table III.1).

Water scarcity has become a problem for the mining industry in Chile for two main reasons. First, the number of mining projects has increased, and although the efficiency of water use has improved in recent years, the absolute needs of the industry have increased. Second, the national regulatory authorities on environmental matters and water have begun to restrict the use of groundwater, a major source of water for mining projects, arguing that the replacement rate of this source has not been kept up. This restriction has been applied even in cases where usage rights had already been granted. Although the mining industry uses less water than other consumers, such as agriculture, strong political pressure remains for mining projects to operate without using underground water sources, or competing with agriculture or other industries.

One long-term option is to rely on desalination plants or use seawater directly. However, these options require significant electricity supplies, both to power the plants and to pump water to mine sites, which are usually located at considerable altitude. Currently there is an adequate supply capacity, yet it is increasingly concentrated in coal, which puts severe pressure on carbon emissions. International policy trends intending to limit water usage and carbon footprints are additional challenges that will need to be accommodated in the future development of the industry. These factors have not been detrimental to foreign investment in mining until now, but they will be important elements in the future as they will increase the operating and construction costs of both current and new projects.

Aware of the importance of water, the Chilean Ministry of Mines established a working public-private team to deal with this issue. Under instructions from the President, the government created an inter-ministerial committee of Water Policy in June 2009 to be chaired by the Minister of Public Works. This committee aims to develop a proposal containing guidelines for long-term national water policy to promote efficient and sustainable use and preservation of these environmental assets.

An element frequently mentioned as positive for investment in mining in Chile is the availability of skilled workers, professionals and services (see Table III.1). The long history of mining in Chile, including experience with a large state-owned mining company, has contributed to the existence of a strong mining culture, with a willingness of workers and professionals to work in the industry. A network of 11 universities offering programmes focused on mining, geology and metallurgy has also contributed to the build up of relevant skills in the Chilean population. Since 2000, Chile has graduated more mining engineers than any other country, with the exception of the United States, Australia and Europe as a whole (Hebblewhite and Knights, 2009).

Some limitations exist to the extent that mine sites are located in remote regions, and require staff to travel from other parts of the country. For example, around 15,000 skilled workers transit in and out of Antofagasta, Chile's largest mining region, every month. These transportation requirements add to the cost of hiring workers.

Political stability and quality of governance

The return of democracy in the early 1990s led to political stability without undermining the market-oriented institutions created in the previous decades. Aside from some changes in social and labour policy, the newly elected Coalition of Parties for Democracy, which governed the country until 2010, largely maintained the reforms of the military government, particularly in the mining industry. The country has defined its approach as a "social market economy" open to the world, with a major focus on free trade. Within this vision, Chile has opted for foreign investment as a fundamental element to the development of certain key activities (mining being one of them), creating specific institutions and instruments to attract and promote it. Record-high commodity prices and company profits in recent years have brought about some opposition to foreign mining enterprises, prompting some, on the

political left, to call for another round of nationalizations. However, with the exception of the introduction of a new specific tax on mining in 2005, the political climate for the mining industry has remained relatively stable.

Along with political stability, Chile possesses high quality governance, and corruption levels are minimal. It scores above the Latin American average in all the World Bank's governance indicators, ranking in the top quartile for indicators covering voice and accountability, government effectiveness, regulatory quality, rule of law and control of corruption. According to the 2008 Corruption Perceptions Index, published by Transparency International, Chile ranks 25th out of 180 countries. In May 2010 Chile became a member of the Organization for Economic Cooperation and Development (OECD), the first South American country to join.

FDI policy

The Foreign Investment Statute or Decree-Law 600 was a legal statute passed in 1974 under the military government, but amended again in 1993 and 2006. Several aspects of the law are attractive from a foreign investor perspective. First, it allows the entry of foreign capital and the creation of a contract with the Chilean government (Articles 2 and 3). Second, it guarantees non-discriminatory treatment for foreign investors with respect to legal or regulatory provisions (Articles 1 and 9). Third, foreign investors are given the right to transfer capital and net profits to other countries (Article 4). Fourth, foreign investors are entitled to include clauses in their agreements with the Chilean government, whereby certain tax rates and regulations can be fixed for a period of 10 or 20 years, depending on the size of the investment (Article 7, 8, 11 bis, and 11 ter). Details on the options available to investors are provided below in the discussion on taxation.

Property rights are also strongly protected by the 1980 Constitution - reformed in 1989 and afterwards - including for foreign citizens, entities or legal persons who are, either

permanently or temporarily, located in Chile. Article 19 outlines the "freedom to acquire ownership over all types of property." Expropriations may still be carried out, but they must be justified by national interest and can only occur through legislative action. Even then, investors targeted for expropriation can challenge the order in court and are entitled to compensation (in the mining industry, this compensation should equal the net present value of the given mine). Although mineral deposits remain under exclusive ownership of the government, mining concessions granted by the government to explore or exploit these deposits are protected as private property (see below).

Internationally, Chile has protected the rights of investors through a number of bilateral treaties (BITs). As of 2010, information available to UNCTAD shows that Chile has signed 51 BITs. Canada and the United States, which are major sources of mining investment, do not have dedicated BITs with Chile, but their free trade agreements (FTAs) have included chapters that address investment protection.

Mineral titles/concessions

Mining laws in Chile have to be compatible with the 1980 Constitution, which specified State ownership of mineral deposits, but at the same time granted a form of private property rights over mineral concessions. The tension between these two objectives was resolved through the enactment of Law No. 18,097, the Constitutional Organic Law on Mining Concessions in 1981. The Law confirms state ownership of all mineral deposits, yet also determines which ones are subject to exploration and exploitation concessions. Article 2 states that "*mining concessions represent real and immovable rights; different and independent from the surface land ownership, in spite of belonging to the same owner; opposable to the Government and to any person; transferable and transmissible; susceptible to mortgage and other immovable rights and, in general, to any act or contract; and are ruled by the same*

civil laws applicable to other immovable rights." In other words, mining concessions are treated as other forms of private property, which are entrenched in the Chilean Constitution. All aspects of concessions, including their granting, duration and expiry, are dealt with exclusively by ordinary courts of justice, which limits the room for administrative discretion. This law was strengthened by its constitutional nature, making it difficult to amend at a later date by a simple majority in Congress.

The Organic Law on Mining Concessions was followed in 1983 by a new Mining Code, which replaced the former Code of 1932. The new Code improved the organization of mining properties by providing new rules to accurately define the boundaries between concessionaires and avoid overlapping properties. This eliminated a problem that had become quite frequent.

As noted, to acquire a concession, investors apply through a non-discretionary judicial procedure on a first-come first-serve basis. Exploration concessions are valid for a period of two year, although they can be extended for another two years if half of the land area allocated is foregone. The holder of the exploration concession has priority when it comes to acquiring an exploitation concession. The process of transforming the exploration concession to allow for mine development includes a required interim period, including a review by Sernageomin. Investors must pay a monthly license fee to the local government based on the size of the land plot. Failure to do so can result in the loss or public auction of the concession.

Mineral taxation

Chile has traditionally been one of the lowest taxed mining jurisdictions, although the government has made efforts recently to increase the share of mineral revenues going to the State. Until 2006, mining companies operating in Chile were not subject to a special mineral tax or royalty. The general income tax regime is the lowest in Latin America, with a corporate tax rate of only 17 per cent - although there is as 35 per cent withholding tax on remitted

profits.[3] Tax incentives to accommodate the specific needs of the mining industry were introduced, including accelerated depreciation and deferred payment of customs duties on imported capital goods. Moreover, as noted, qualified investors can enter a stability agreement with the Chilean government to fix the tax regime (box III.1). The above factors combined to establish Chile as one of the jurisdictions with the lowest tax burdens for mining activities (Colorado School of Mines, 1997; Otto, 1997).

Box III.1: Tax stability agreements under Decree-Law 600

Income taxes: Article 7 of Decree-Law 600, which had been included in the original 1974 legislation, allows foreign investors to put a clause in their contract with the State ensuring a fixed corporate income tax rate for 10 years. The fixed rate is 42 per cent, which is higher than the standard tax rate for remitted profits (35 per cent). The investor may opt out of the stability clause at any time, and enter the general tax regime, but they are not allowed to re-instate the agreement at that point. Many foreign investors opted for this regime, paying a slight premium in corporate tax rates to protect themselves against future taxes or royalties and to secure the use of accelerated depreciation and other tax incentives.

Indirect taxes: Article 8 allows a clause to be inserted in the agreement, which fixes the VAT and charges for imported machinery and equipment. This clause remains in place for the period that it takes to implement the investment agreed upon. This allows mining companies to assess with certainty the costs associated with importing inputs for the exploration and mine construction phases. In the case of certain physical capital and technology imports, the VAT is waived entirely.

Special regime for large projects: An amendment to Decree-Law 600 in 1993 (Articles 11 bis) offers additional benefits to investments over $50 million, and specifically those in the mining industry. These benefits include: extension of the 42 per cent fixed income tax under Article 7 for a period of up to 20 years; permission to hold accounts in foreign currency; and fixed tax incentives for up to 20 years, such as those related to accelerated depreciation, carry forward of losses, or start-up and

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Box III.1 (concluded)

organizational expenses to the government. As of 2008, the policy under Article 11 bis was under review, and no new agreements were being approved.

Special mining tax amendment: Decree-Law 600 was amended again in 2006 to adjust for the introduction of a new specific mining tax (see below). The amendment (Article 11 ter) allows investments equal or higher than $50 million to fix this new tax rate for 15 years, and to avoid being subject to any increase in start-up or organizational licensing expenses. However, to be eligible, the investor must opt out of any other stability agreements they are party to under Articles 7 and 11 bis. Some firms have decided to stay under those previous regimes, since companies that signed agreements prior to 2005 are not required to pay the specific mining tax. Some companies will not be required to start paying the royalty until 2024.

However, this low level of required contributions, combined with rising world prices for copper, stimulated political demands to increase taxation of the industry. The government has addressed these concerns through several channels, including changes to the accelerated depreciation regime and measures to avoid tax evasion. Most notably, however, it passed Law 20.026, establishing a new specific mining tax, which came into force in 2006. Mining companies selling the equivalent of less than 12,000 tons of fine copper do not pay the tax. For sales above this level, the tax rate ranges from 0.5 to 5 per cent, depending on output.

Although it raised the required level of fiscal contributions for companies, the implementation was done in such a way as to minimize the effects on investment attractiveness. First, the tax was established in consultation with the foreign mining industry, resulting in several modifications to the original proposal. Instead of applying the tax rate to measures of sales revenues, it would apply to taxable operating income, which allows a wider range of eligible tax deductions. This makes the tax similar in some aspects to an additional income or profits tax, which ensures that the state shares some of the financial risk.[4] Second, companies that had signed up to tax stability agreements under Decree-Law 600 before the passage

of the royalty were exempt for the remainder of their contracts. However, incentives were offered for companies to opt into the new taxation regime. Most of the large copper mines operated by TNCs would face the 5 per cent rate, but those opting out of their tax stability agreements are guaranteed a rate of 4 per cent until 2013. The tax's careful design and implementation has maintained Chile's competitiveness in this area (see table III.1).

In October 2010, Chilean lawmakers passed a bill increasing the maximum mining tax to 9 per cent in order to raise funds for reconstruction after the earthquake that took place earlier that year. As with the 2006 tax changes, companies with pre-existing stability agreements will not be required to pay it, although they will be offered incentives to opt into the regime. Chile's private sector Mining Council has expressed concerns that this may result in a much higher tax burden.

Environmental and social requirements

Until the late 1980s, despite the existence of a number of different laws and regulations, Chile's overall environmental regime lacked coherence and was not consistently enforced (Lagos and Velasco, 1999). While this reduced the regulatory obligations for foreign investors, it also created uncertainty and did not prevent environmental regulations from being applied in a discriminatory fashion. For example, in 1985, a special decree was issued to a investor, Disputada, to improve air quality at one of its smelters, while state-owned CODELCO and ENAMI's five smelters were unaffected.

As Chile's mining industry developed, its environmental impact moved to the forefront. In the early 1990s, the newly-elected democratic government created the National Commission of the Environment (CONAMA) and passed the *Environmental Framework Law*. In 2001, the legal framework was complemented by substantive regulations aimed at particular environmental issues.

A key outcome of these reforms was the introduction of compulsory EIAs in 1997, particularly for large mining projects.

The EIA process begins with CONAMA, through its regional commissions (COREMA), proposing the terms of reference. The company is then to submit a study by an accredited consultant or university. COREMA then analyzes the results to come to a decision. The company's initial EIA study is publicly available for comment by affected stakeholders, who may submit specific concerns to be taken into consideration by the review board. If the EIA is approved, a declaration is made determining the specific conditions to be met by the project. These include conditions related to the environment, population health and local communities. Tools used to manage the project may include plans to mitigate environmental risks, to repair or restore the site, to compensate for any damage that may occur, and to monitor key aspects of the project. The results of an approved EIA are enforced by CONAMA and COREMA, which may issue warnings or level financial penalties in cases of non-compliance. Currently, the EIA process focuses primarily on the exploitation phase of mining projects; exploration activities and mine closure are not usually addressed.

Although Chile has been enhancing its environmental policies and regulations since the mid-1990s, foreign mining investors do not find them particularly burdensome. Many senior mining TNCs already have their own environmental standards and procedures, making it feasible for them to meet the requirements under Chilean legislation. In fact, Lagos and Velasco (1999) found that "*the [environmental] policies and practices of mining companies in Chile seem to be way ahead of the legislation and the institutional system*." If anything, the creation of CONAMA and the introduction of compulsory EIAs have reduced the uncertainty facing mining companies regarding their environmental obligations, allowing them to plan their projects with these in mind. Mining investors have ranked Chile tenth out of 72 jurisdictions in this area (see table III.1).

Relations with indigenous communities have not posed a major challenge to foreign mining investors in Chile. This can be estimated from the fact that international mining companies rank the jurisdiction ninth most attractive worldwide when it comes to levels of uncertainty concerning indigenous land claims (see table III.1). One of the main reasons for this is that mining activities typically take place in the North of the country, where the indigenous population is less present. Mining activities in the central and southern parts of Chile face stronger competition for land use with indigenous communities. Another reason, however, is that regulations concerning indigenous land claims and resource rights have been limited in Chile until recently. Mineral deposits belong to the state, and mineral concessions on indigenous land have been traditionally granted without consent from local communities. The 1993 Indigenous People's Law gave indigenous groups some status and recognition, but did not address the issue of natural resource rights. In 2008, however, Chile ratified ILO Convention 169, which gives the State substantive obligations in the area of indigenous rights and community consultations. Yet, a hard legal framework in this area has yet to be implemented.

C. Contributions and impact of mining FDI

Greenfield FDI has been responsible for the majority of the growth in Chile's mining industry since the early 1990s, and the positive impact goes beyond increased production and employment (see table III.2). Foreign mining TNCs have also played a role in training local workers, developing local supplier firms, and bringing in international environmental and social best practices. On the other hand, their contribution to government revenues has been limited until recently. This section examines these contributions, and particularly the role of government policy in shaping them.

Table III.2: Summary of contributions and impacts of FDI in Chilean mining industry

Investment, production and employment	- FDI has been responsible for the vast majority of increased investment and mineral output since the mid-1990s
Government revenues	- Until the mid-2000s, foreign TNCs contributed significantly less to government revenues than CODELCO - Recently, however, taxes paid by mining TNCs have risen to a level more in line with their share of production
Local enterprise development	- Early foreign investors employed Chilean workers in mines, helping to develop a local base of skills and expertise - In the 1990s, foreign mining TNCs had a high propensity to contract out to local suppliers
Environment and social impact	- Environmental and social practices of foreign TNCs have traditionally been higher than local firms - Foreign TNCs have worked with government to clarify and enhance environmental regulations

Investment, production and employment

Over the past 20 years, mining has accounted on average for around 8 per cent of GDP measured at constant prices. Furthermore, the growth rate of mining (over 6 per cent per year) exceeds the average real GDP growth for Chile (around 5.5 per cent). At nominal prices, mining's share of national production soared to over 23 per cent in recent years, as a consequence of the increase in international commodity prices. The significant expansion of copper production also shows up in the country's export statistics. While in 1997 the value of copper exports where $6.9 billion, in 2008, the value had increased to $36.6 billion. Part of this is due to price effects, but physical production has still increased substantially.

The contribution of mining to national employment is more limited than its contribution to economic growth because mining is highly capital intensive. Direct mining employment in 2009 amounted to 50,000 jobs, or under one per cent of total employment. Yet, mining's contribution to employment on a local level can be quite significant (box III.2). The amount of indirect employment created by mining activities is more substantial. Contractor workers in mining amount to about 40,000, while an additional 400,000 jobs in other sectors of the economy can directly be linked to the demand from the mining industry (around 6 per cent of total employment) (Consejo Minero, 2008).

Box III.2: Regional contributions of mining activities

In the northern regions of Chile, mining is by far the most important economic activity, not only because of its direct operations but also for its contribution in generating other economic activities. Employment generated by mining in the northern regions as a percentage of total employment exceeds the national average of mining, with 2.3 per cent in the region of Tarapacá, 13 per cent in Antofagasta and 10.1 per cent in Atacama. According to the socioeconomic survey of Chile (CASEN), poverty in the region of Antofagasta declined from 34 per cent in 1990 to 7.3 per cent in 2006, one of the lowest levels in the country. In the metropolitan area of Santiago, it declined from 33 per cent to 10 per cent.

A study carried out by COCHILCO, which analyzed the relationship between mining and quality of life for people in Chile, contrasted the quality of life in mining and non-mining areas between 1994 and 2003.

The study found that regions and communities with high dependence on mining systemically performed better according to a range of indicators, including lifespan, literacy, education, household income, poverty rates, inequality, and the regional Human Development Index.

Sources: Mideplan (2008); COCHILCO (2008).

Although state-owned CODELCO remains the largest mining company in Chile, private mining companies, and foreign investors in particular, have played a more important role in the recent expansion of the industry. Whereas Chilean copper production grew only 20 per cent between 1974 and 1981, it rose by 332 per cent between 1982 and 2007, after the introduction of liberal foreign investment legislation and mining regulations (Wagner and Diaz, 2008; COCHILCO, 2009). From 1990 to 2008, the private mining sector in Chile increased at an average annual rate of 16 per cent, nearly three times higher than the industry as a whole.[5] Foreign affiliates now make up more than 70 per cent of copper mining. CODELCO's investment and production levels have not been able to keep up with those of foreign companies (box III.3). On the other hand, foreign affiliates have been less likely than CODELCO to refine copper locally, preferring instead to supply their refinery assets abroad (Sáinz, 2007). Since the 1980s, the share of refined copper in total copper exports has dropped from 70 to just over 50 per cent in 2005.

Box III.3: The challenge for state-owned companies - the case of CODELCO

In the 1970s and 1980s, CODELCO dominated the copper industry in Chile (Lagos 1997: 54-57). However, beginning in the 1990s, private (mostly foreign affiliates) production levels rose quickly, while CODELCO's output remained relatively constant. As a result, by 1995, copper production among private mining companies surpassed that of CODELCO. This can be explained to a large extent by lower levels of investment. Copper investments by CODELCO dwarfed those by foreign investors until the late 1980s. In 1988, however, annual FDI inflows to the mining sector began to exceed the level of investment by the SOEs.

Today, CODELCO faces great challenges given its activities in exploitation of aging mines with declining head grades, and the consequent need of large new investment to maintain or improve its competitiveness.

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Box III.3 (concluded)

CODELCO executives recently estimated that within the next ten years, the company would need to invest $12 billion in structural projects (equivalent to 5.7 per cent of GDP in Chile in 2008) to offset the deterioration of mining variables such as low grades, and higher costs due to greater transportation distances.

To address some of these concerns, a new corporate governance policy was recently enacted, introducing professionalized senior management. The new governance model excludes representation at the ministerial level and seeks to remove political influence from the appointment of other directors. Yet one of the continuing problems affecting the competitiveness of CODELCO is its high level of mandatory contributions to the government that prevent it from accumulating profits to reinvest and grow.

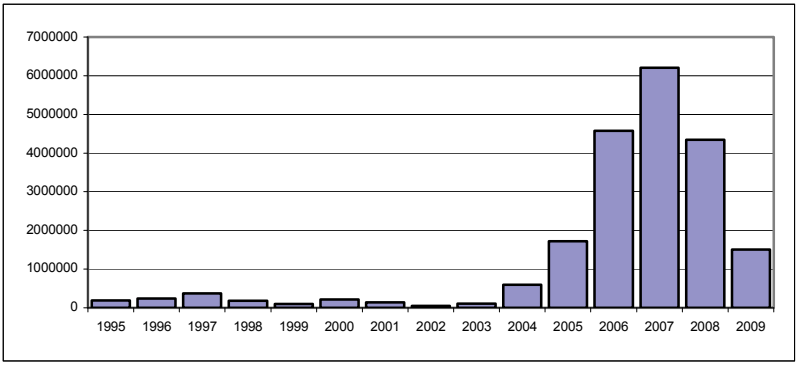
Government revenues

The distribution of mineral rents between the government and foreign companies has been a major issue in Chile, with concerns that the government was not receiving its fair share. Chile lacked a specific mining tax or royalty until 2006, relying instead on the general income tax system to secure a share of mineral revenues. While this regime improved the attractiveness of investing in Chile, by not having a specific royalty, the government was essentially forgoing payment for its mineral endowment. Moreover, tax incentives available under Article 11 of Decree-Law 600, such as accelerated depreciation, reduced income tax liabilities, particularly in the early years of a project. This investor-friendly tax regime may have been necessary to compensate for the history of political instability in the 1970s and 1980s. However, debates over taxation intensified in the late 1990s and early 2000s, when despite consistent inflows of FDI and rising copper production, income tax revenues from mining remained very low (figure III.2).

From 1991 to 2003, income taxes paid by the private (mostly foreign) copper sector came primarily from only two firms,

Escondida and Pelambres, with the rest largely exempted due to tax incentives (Ruiz-Dana, 2007: 25). Over this period, the 10 largest private mining companies paid a total of just under $2 billion in taxes to the government. This figure contrasts with the contributions of CODELCO over the same period, which paid a total of around $6.5 billion in taxes, with an additional $2.5 billion in profit dividends (UNCTAD, 2007: 138). This discrepancy becomes even more significant when one considers that private sector copper production had surpassed that of CODELCO by 1995.

Figure III.2: Income tax paid by top ten private copper producers (thousands of US$)



Source: Ministry of Finance and Tax, COCHILCO.
Note: Includes income tax and the specific mineral tax, which was implemented in 2006.

Aside from policy decisions, tax evasion and avoidance were other factors limiting government revenues from the mining activities of TNCs (Ruiz-Dana, 2007: 25-26). For example, foreign affiliates could manipulate transfer prices and sell unrefined copper to a related company abroad at an artificially low price, reducing both the value of their sales and resulting tax obligations. Another approach was to borrow heavily from parent companies through loans. The tax on remitted interest payments to the parent company was only four per cent, compared to 35 per cent for remitted profits. This loophole was closed in 2001 by raising the tax on foreign

interest payments to 35 per cent, and limiting the use of accelerated depreciation deductions for remitted profits. However, most companies were initially exempted from these changes under Article 11, Decree-Law 600 contracts.

Tax revenues from the major private copper producers rose significantly in 2004-2007 to a peak of $6 billion. There are three reasons to account for this. First, world copper prices nearly quadrupled over the period 2004-2008, before the financial crisis caused them to drop again. High prices increased the profits of mining companies, resulting in higher income tax receipts. Second, some tax stability agreements and incentives (e.g. accelerated depreciation) began to expire in 2004, bringing more companies into the general taxation regime and increasing tax revenues (del Pino *et al*., 2004: 228). Third, the implementation of the specific mining tax in 2006 has increased the government's take of mineral rents. Revenues collected from the royalty have been $603 million in 2006, $566 million in 2007 and $675 million in 2008. The specific mining tax is expected to yield more revenues in the future, as some companies continue to have agreements under Decree-Law 600 that shielded them from this recent change. Moreover, recent 2010 legislation increasing the specific mining tax to 9 per cent is expected to bring in an additional $1 billion over a three-year period.

The fluctuations of copper prices, when combined with Chile's reliance on profit-based taxation of mineral production, make government revenues highly volatile. In 1985, Chile created a fund to manage this volatility. The role of the Copper Stabilization Fund was to absorb excess revenues in boom times, which could be drawn on in times of low prices. This fund was replaced in 2007 by two new funds: the Economic and Social Stabilization Fund, and the Pension Reserve Fund. The former receives all fiscal surpluses over 1 per cent of GDP, while the latter receives between 0.2 and 0.5 per cent of GDP annually.

Domestic enterprise development

Some have argued that the Chilean development model, which succeeded in increasing growth based on mineral extraction, must evolve into a second phase of more complex production (Meller, 2000). In the long run, it is desirable to develop an internationalized cluster of mining and related supplier firms (Lagos and Blanco, 2010: 274). This would ensure a sustainable mining industry that does not rely on the level of domestic mineral deposits and investment levels. Evidence suggests that FDI has already made contributions towards this goal.

Over the past few decades, domestic and foreign mining companies have increasingly embedded themselves in the local economy, having outsourced activities to focus on their core business. In the early days after nationalization, the mining industry had a limited impact on the broader economy. CODELCO and the foreign companies before it followed an "enclave" operating model, where mining activities were vertically integrated, with minimal linkages with local firms (Lagos and Blanco, 2010: 9). Yet, according to a study by the Mining Council, the vast majority of mine workers were Chilean, including some senior managers and engineers. This promoted the development of a local knowledge and skills base that would become important to the broader industry. From the early 1980s to the early 2000s, the ratio of regular workers to those employed by contractor firms dropped from five to one (Lagos and Blanco, 2010: 9). The ratio dropped at an even faster rate among private (mostly foreign) mining companies. While this was often due to the fact that contracted workers required lower wages than regular employees, it nonetheless helped create a network of local supplier firms. The northern region of Antafagasta is often cited as an example of a developing regional mining cluster (Buitelaar, 2001: 11-13; Lagos and Blanco, 2010: 9-10).

A number of government policies have helped facilitate these developments, with the most relevant focused on providing services related to skills development, innovation and R&D. These policies have contributed to the capacity of local firms to supply

foreign affiliates and have encouraged inter-firm collaboration. An early example is the Centro de Investigación en Minería y Metalurgia (CIMM) which, since its founding in 1970 to assist with the nationalization process, has focused on building domestic capabilities in the mining industry. It now encourages collaborative research among public and private mining firms and offers them commercial services through a subsidiary organization. The 1993 "Chile exports mining" programme established as an explicit objective the development of competitive mining-related industries. Most recently, Chile established the National Cluster Council in 2009, a comprehensive initiative involving the federal government, academia, industry and regional governments. Mining is one of the industries to be addressed under this framework. Chile's network of universities specializing in mining-related education and research has provided important services to companies, and will play an important role in future cluster initiatives. Innovation and R&D activities should also receive a boost from the revenues of the 2006 mining tax, which are earmarked for these purposes. So far, however, the government has been slow to translate these funds into concrete programmes. Up to 2008, $30 million had been spent.

Despite the growth of outsourcing and specialization, and government efforts to improve firm capacities and capabilities, some studies find that cluster developments remain limited (Aroca, 2001; Arroyo and Rivera, 2004). Small and medium-sized enterprises (SMEs) are found to lack the capacity to innovate and link up with large mining companies. Supplier relationships are akin to "hubs and spokes", where TNCs at the centre have significant bargaining power over suppliers, resulting in short-term contracts and competition based on low costs (Romani and Atienza, 2005). Nonetheless, there is some evidence to suggest that Chile is at least moving towards a model with "virtuous interactions among agents and a significant learning process at the national level" (Buitelaar, 2001: 11).

There are also signs that Chilean mining companies are growing and becoming more internationally oriented. For example, outflows of mining FDI have been increasing since 2000.[6] Chilean FDI mining outflows even exceeded inflows in 2000, 2002 and 2004. The government has used legislation to encourage the use of Chile as a base for foreign TNCs to engage in outward FDI. The Investment Platform regime allows foreign investors to set up an affiliate in Chile that can invest in third countries. The affiliate is not required to pay Chilean taxes on income earned abroad. The idea is that these companies can set up regional headquarters in Chile. The trend of outward mining FDI in Chile represents a potential engine to drive the development of internationally competitive mining clusters.

Environmental impact

There is evidence that FDI has made strong contributions to improved environmental practices in the Chilean mining industry. A study comparing CODELCO and ENAMI with two early foreign investors (Disputada and El Indio) found that, during the 1980s, the foreign companies undertook stricter environmental measures and had more advanced environmental management practices, going beyond the requirements of Chilean law (Lagos and Velasco, 1999). For example, major mining projects by foreign TNCs in the early 1990s often employed EIAs, even before there were official regulations requiring these. The gap between foreign TNCs and the SOEs narrowed by the late 1990s, but there were still signs of lagging. Prior to 2003, foreign companies were the only ones certified under ISO 14001, an internationally recognized environmental reporting standard, while the majority had environmental risk prevention plans and mine closure plans (Borregaard and Duffey, 2002: 15). In 2003-2004, for example, the Barrick Gold Corporation used a mine closure plan for the El Indio mine, even though the law governing this procedure was not yet enacted by the Chilean parliament. The environmental practices of foreign mining companies are likely motivated by shareholder pressure to follow the same practices as in jurisdictions with more

advanced regulations, and the desire to anticipate future regulations, which may be expensive to comply with (Lagos and Velasco, 1999).

Foreign mining TNCs have not only employed more advanced environmental practices, they have also been a force driving Chilean environmental legislation (Borregaard and Duffey 2002: 16). They have been motivated by a desire to reduce regulatory uncertainty, and to create a level playing field with Chilean firms.[7] For example, a major motivation for the government to create CONAMA in 1990 was to clarify environmental regulations facing foreign investors. The standards and procedures of the current EIA system were also strongly drawn from the experience of voluntary EIAs submitted by foreign companies throughout the 1980s and early 1990s. In another example, the Mining Council, whose membership is largely made up of foreign companies, created the Framework Accord for Cleaner Production with the Chilean government in the early 2000s. The Accord outlined commitments on mining-specific environmental issues that would guide future performance improvements and public regulatory efforts (Newbold, 2006: 259).

Despite notable progress in environmental performance over the past two decades, there continue to be gaps that the government has sought to address. In particular, the OECD (2005), for example, has expressed concerns about the follow-up on commitments made by companies during the EIA process, due to inadequate enforcement resources. To strengthen the institutions associated with environmental assessment and enforcement, in 2009, the Chilean Parliament enacted a law establishing a Ministry of Environment, an Environmental Assessment Service and a Superintendent of Environmental Control. This new law gives the Ministry the power to set policies and environmental regulations on a broad range of issues such as the conservation of biodiversity and renewable natural resources. The new Environmental Assessment Service will streamline the EIA process, while the Superintendent would be responsible for environmental monitoring.

To ensure that environmental issues are given adequate political importance and integrated into broader policy frameworks, this recent legislative initiative also includes the creation of a Council of Ministers for Sustainability. This formal forum will discuss environmental policies and coordinate the content of environmental regulation with the Ministry of Environment. The Council is to be chaired by the Minister of Environment, and will be composed of the Ministers of Finance, Health, Economy, Development and Reconstruction, Energy, Public Works, Agriculture, Housing and Urban Development, Transport and Telecommunications, Mining and Planning.

Another notable limitation in Chile's environmental framework is the absence of a comprehensive framework for mine closure. While legislation was introduced in developed countries in the 1980s, the formulation of such a law in Chile began only in 1999, and it has yet to be enacted. The Mining Safety Regulations established in 2004 make closure plans mandatory. However, there is not yet any systematic legislation governing all aspects of closure plans, including regulatory, environmental, technical and financial issues.

Social impact

The impact of mining activities on local communities in Chile has been mixed. On the one hand, there is strong evidence of improved socio-economic outcomes in the northern regions, which depend on mining activities (see box III.2). Even in these regions, mining often takes place in remote and unpopulated areas, which works to limit land use conflicts. Yet, there are cases of mining projects competing for land and water resources with local communities and agricultural activities. The Pascua-Lama gold mine being developed by Barrick Gold illustrates these challenges, and how they are often addressed through the EIA process. (box III.4). The case also demonstrates the advanced consultative techniques used by major TNCs to integrate local concerns into their operations.

Box III.4: Pascua-Lama gold mine and community consultation

Currently under development in the mountains on the Chilean-Argentinian border, Pascua-Lama will be the second largest gold mine in South America. During the exploration and planning phases in the early 2000s, local activists began to protest potential environmental and social costs associated with the project, particularly related to alleged glacier damage that would affect the local water supply and traditional indigenous ways of life.

The smooth development of the Pascua Lama project has since been primarily a function of the company's careful management of community relations through CSR initiatives. In 2004, Barrick Gold launched a series of door-to-door consultations and agreements with community organizations. Based on their input, the company initiated development projects related to health, infrastructure, and social work. Two publicly available EIAs have been completed by Barrick Gold. During the second assessment, Barrick Gold struck a deal with the private management board of the basin's water supply (made up primarily by large-scale farmers), providing $60 million in compensation for potential damages, and $5 million to construct a new reservoir. This agreement secured the support of the water board. An opposition movement to the mine remains, particularly among the Diaguita indigenous community, which is made up of families committed to ancestral farming practices.

Source: Urkidi (2010).

Despite the willingness of companies to consult stakeholders, the government still has a role to play, particularly when it comes to protecting the land and resource rights of indigenous peoples. As noted, Chile has been slow to implement legislation in this area. Traditionally, there was no inherent recognition of indigenous rights over natural resources, such as water or mineral deposits. As a result, mining concessions could be granted by the government to mining companies without consent of the community. Of the 1,357 concessions granted by 1996, 104 were

on indigenous lands (Aylwin, 1998). Chile's recent ratification of ILO Convention 169 resulted in a draft Code of Responsible Conduct (CCR), establishing principles for consultations with indigenous communities. Yet, dissatisfaction with the Code from both the industry and indigenous groups led to its withdrawal, and the government is in the process of formulating a new approach.

Notes

[1] CODELCO's was politically important to the military government, most notably through a 10 per cent tax on export revenues earmarked for military spending. Moreover, privatization would likely have triggered labour action by powerful CODELCO workers, causing major damage to the Chilean economy.

[2] The Chilean government has recently imposed a new specific tax on mining companies, seeking to secure a larger share of profits deemed above the level necessary to justify private investment.

[3] In practice, foreign affiliates are subject to the 17 per cent "First Category Tax" on operating income. The 35 per cent withholding tax applies to the same base as the First Category Tax, but the payment of the latter is credited towards the amount. The 42 per cent tax rate, if applicable, replaces these two taxes (see box III.1).

[4] However, certain deductions under the general income tax regime are not applicable - namely, accelerated depreciation, carry-forward of losses and interest payments.

[5] Calculated based on figures from Central Bank of Chile

[6] UNCTAD TNC/FDI database.

[7] As noted, there have been cases of uneven application of environmental regulations to the disadvantage of foreign affiliates.

IV. Best practice lessons from Canada and Chile

Canada and Chile have attracted high levels of FDI to their respective mining industries. With some exceptions, they have secured significant economic benefits from these investments while limiting their environmental and social costs. Doing so has meant finding the appropriate balance between, on one hand, an attractive policy environment for mining TNCs and, on the other, tax and regulatory requirements that hold these companies accountable to the country's development goals. Drawing on their experiences, this section presents a set of lessons for mineral-rich developing countries and their policymakers (table IV.1). Given their basis in the Canadian and Chilean cases, these lessons cannot be generalized to all situations. There is no "one-size-fits-all" model of mining industry development. The following lessons should be taken as guidelines or policy options that require adjustment according to specific contexts and constraints.

Table IV.1: Lessons for mineral-rich developing countries and policymakers

Policy Areas	Lessons
Supply factors	• Enhance public and private efforts in exploration and the accumulation of geological data • Proactively address the water, energy and transportation needs of major projects • Encourage the training of specialized engineers and mine technicians
Policy stability	**1.** Use policy instruments that assure foreign investors of regime stability (e.g. constitutional guarantees of property rights, tax and regulatory stability contracts, etc.) **2.** Use multi-stakeholder consultations to create social and political consensus and sustainable mining policies **3.** Adjust tax and regulatory policy when necessary, but do so gradually and transparently, taking into account investments under previous regimes
Taxation	• Consider geological endowment when setting tax regime • Prioritize profit-based taxation, yet combine with proactive tax enforcement and management of financial risks • Grant tax incentives that allow capital costs to be recuperated more quickly and that recognize the cyclical nature of mining
Industry and local enterprise development	• Rely on capabilities of senior mining TNCs for efficient mineral production • Ensure that the mineral title and concession laws facilitate competitive mine development • Assist the efforts of TNCs to develop local workforce and supplier capabilities, and facilitate the development of mining clusters

Environmental and social impacts	• Require comprehensive EIAs for project approval and ensure government follow-up on commitments by project developers • Implement a legal framework that protects the rights of local communities and ensures their participation in mineral development • Incorporate TNCs with leading environmental and social practices into domestic private sector associations and government policy

As noted in Section I.C, this study does not directly address broader challenges of resource-based development, as identified by literature on the "resource curse" (see box I.1). It is worth restating here that countries seeking to develop their mining industries must have the capacity to confront macroeconomic challenges associated with dependence on volatile commodity prices. These include highly cyclical tax revenues and the danger of an overvalued real exchange rate limiting the competitiveness of exports in other industries (i.e. Dutch Disease). High quality governance institutions are also essential to limit rent-seeking or corruption *that may occur due to the availability of resource revenues.*

1. How to improve supply factors affecting mining investment

Support the public availability of geological data and enhance these databases through public investment and the encouragement of private exploration

Having and maintaining a significant mineral endowment is a necessary condition for a successful and competitive mining industry. An important source of a mineral industry's continuing competitiveness comes from mineral exploration activities, which can expand the level of known and probable mineral reserves. Policy tools used towards these ends by Canada and Chile have relied on both the public and private sector.

Direct government efforts to enhance geological potential should include public funding for geological studies and mapping, as well as the storage and dissemination of geological data to mining investors. In Canada and Chile, these tasks have been assigned to specialized government agencies. Private sector exploration has also been used in both countries to maintain the overall competitiveness of the mining industry. Effective policies to facilitate private exploration and ensure its contribution to overall mining industry competitiveness include:

- Requiring the deposit of geological information as a condition for securing an exploration license. This information must be kept confidential for a period of time so as not to undermine the incentive for investors to explore.
- Facilitating access to finance for junior exploration firms. In Canada, the TSX Venture helps facilitate the funding of high-risk exploration firms that find it difficult to secure project finance. Special tax vehicles allow exploration expenses to be "flowed-through" to corporate and individual shareholders as a tax deduction on other sources of income.
- Limiting the taxation of mineral rents, even in cases where they are above the level necessary to justify investment in the production stages. Exploration efforts rely on highly profitable mineral deposits to compensate for the risk of not making a discovery. Taxing away these "excess" returns limits the incentive to explore. Chile's low rate of mineral taxation in the 1990s and early 2000s helped spur extensive private exploration efforts. This, of course, must be weighed against foregone government tax revenues.

Proactively address the water, energy and transportation needs of major mines through high-level interaction between the government and the industry. Private investment can be sought to carry out necessary projects.

While mineral deposits are necessary to develop a mining industry, so are supplies of cheap water and competitively priced energy to extract these minerals in a cost-effective way. Transportation infrastructure is also needed to bring in physical capital for mine construction and to transport the extracted minerals for exportation or further processing. Thus, these factors are key elements used by investors to assess the profitability of exploiting mineral deposits. The location of mineral deposits in remote regions with limited pre-existing infrastructure compounds the problem facing policymakers.

One approach to dealing with the general challenge is to involve mining investors in the formulation of infrastructure policy. For example, a significant share of mining in Chile takes place in the arid desert region in the north of the country, putting significant pressure on water resources. To address these issues, the Chilean government has created a dialogue between private mining companies and the public sector, and has established a high-level committee involving key ministries, including those involved in infrastructure development. By taking the needs of the mining industry into consideration, opportunities can be identified to maintain its competitiveness in this realm.

In some cases, mining TNCs may construct their own electricity, water or transportation infrastructure, although this raises their initial capital needs and operating costs. This was particularly the case for copper TNCs in Chile prior to the nationalizations, and has been seen more recently with the need to construct desalination facilities to supply water to large-scale projects. Governments can ease the burden by sharing the costs and, by doing so, can also leverage projects to provide infrastructure to remote communities in the vicinity. However, it is not realistic for mining companies to

operate as surrogate government agencies in remote regions. Where companies invest in local infrastructure such as roads, railways, airports, electricity provision and other key infrastructure, host governments should be willing to recognize this contribution financially.

Another option for governments is to use the demand from major mining projects to "anchor" other private investments in infrastructure. This, however, requires a pre-existing legal and regulatory framework to outline the terms of private infrastructure investments, and to ensure reasonable prices for mining companies and other users.

Encourage and facilitate the training of specialized engineers and mine technicians. This can be done through the creation of domestic training institutions, facilitating TNC training programmes, and/or training local workers abroad.

Mining has become more technologically sophisticated over the past century. Modern mines are large and capital intensive and require a highly trained and professional workforce for their operations to be profitable. Local presence of these workers reduces costs for mining TNCs, which otherwise would need to train them independently, or import foreign workers at higher wages and/or living expenses. Building and maintaining a strong professional and technical training system is a necessary part of any long-term competitive national mining strategy.

Canada's pool of skilled mining engineers and technicians grew along with the domestic development of the mining industry. A strong network of training programmes and educational institutions, such as those that emerged in Ontario's Sudbury region, developed in response to industry needs. In Chile, local workers were initially trained by foreign TNCs, which found this approach cheaper than importing foreign workers. Over the years, a strong network of educational institutions has emerged, training more mining engineers on an annual basis than any other country, with the exception of the United States, Australia and Europe as a whole.

Some mineral-rich developing countries may lack the capacity to develop specialized training institutions locally. Moreover, reductions in transportation costs have led to increased use of "fly in-fly out" practices that rely on foreign workers, often precluding the need for TNCs to train locals. In these cases, initial accumulation of specialized mining skills may require programmes that send local mining professionals abroad for training. In Botswana, for example, co-operative programmes between the government and mining TNCs have trained local professionals in places such as the United Kingdom, Australia and South Africa.

2. How to ensure policy stability

Use policy instruments that assure foreign investors of regime stability, including constitutional guarantees of property rights and security of tenure, tax and regulatory stability contracts with the state, and international investment agreements.

With long investment timelines, large up-front capital requirements, and exposure to volatile mineral prices, mining projects require a high degree of policy stability to allow for long-term planning. They require protection from expropriation, secure rights over mineral concessions or titles, and assurances against arbitrary or unforeseen changes in regulations and taxation.

Chile's experience is highly relevant for mining-rich countries seeking to convince foreign investors that these factors are in place. After American copper TNCs were expropriated in 1971 with little or no compensation, FDI came to a halt. Chile faced a seemingly insurmountable challenge when it sought to reintroduce FDI in the industry several years later. Yet as early as the late 1970s and early 1980s, FDI inflows began to trickle into mining projects again, and by the mid-1990s, FDI had once again become the dominant driver of the industry's development.

Important policy tools used by Chile to achieve this goal include:

- Foreign investment legislation guaranteeing national treatment and profit repatriation;
- Option for mining investors to enter into special agreements with the government to ensure the stability of the tax and regulatory regime for a period of up to 20 years;
- Guarantee of property rights of foreign investors in the Constitution, with the right to compensation in cases of expropriation;
- Mining laws treating concessions as property rights protected under the Constitution.
- International agreements guaranteeing the rights of investors from major sources of mining investment, including the United States, the United Kingdom, Canada and Australia

These laws outline strong protection for foreign mining investors, enforceable in the country's courts. Yet, it is important to carefully craft these provisions so that an appropriate balance is struck between the interests of investors and those of the host country. In Chile, for example, in exchange for entering a stability agreement with the government, investors pay a higher corporate tax rate (42 per cent compared with the standards 35 per cent on remitted profits). In addition, the government retains the right to make changes to the VAT and to apply new regulations to the industry, as long as they do not discriminate between domestic and foreign investors.

Adjust tax and regulatory policies to conditions over time, but do so gradually and transparently, with respect for investments made under previous regime.

Although policy stability is a key determinant of investment attractiveness for mining TNCs, it is not an end in itself. Changes in fundamental circumstances justify adjustments to aspects of the regulatory or fiscal regime. Mineral deposits are property of the country in which they are located, and governments must ensure that they receive a fair share from their sale. However, it is important to avoid creating perceptions of uncertainty and instability. Therefore, changes should be incremental, transparent and have limited applicability to foreign investors established under previous regimes.

Chile provides a positive example of how to find the appropriate balance between stability and flexibility to accommodate changing circumstances. Issues such as the environment, labour rights, and the government's share of mineral rents, have become more important since the mid-1990s, and Chile has been modifying its policies in these areas. For example, EIAs have been made mandatory for all projects. In light of rising higher copper prices, the taxation regime has also been reformed over the past decade to include a specific tax on mineral extraction, and to limit the availability of tax incentives. The government is also reviewing their foreign investment law to phase out the availability of tax and regulatory stability agreements.

Despite these changes, Chile has, for the most part, maintained perceptions of policy stability among foreign investors. Policy changes over the past decade have not been drastic, and they have been publicly debated, with the input of the industry taken into consideration. Moreover, companies party to existing stability agreements with the government have been exempted from some of the new measures.

Use multi-stakeholder consultations to create social and political consensus on general direction of mining policy.

The contents of laws and regulations mean little if they constantly change along with changes in the government or political

regime. In Chile, for example, the strong legal provision protecting foreign investors were imposed by the military government, making their long-term stability questionable. Only when democracy returned in the early 1990s, while the laws remained unchanged, did FDI flows begin to expand rapidly.

To help build social and political consensus, governments in mineral-rich countries should therefore seek agreement between key stakeholders around a set of tax and regulatory policies. One way is to conduct public consultations with stakeholder representatives, who then agree to a final document that can guide future policy. It is important to involve both the industry and its critics in order to find lasting compromises. Typically, company and industry representatives will be eager to engage in these processes to limit regulatory risks in the future, and may therefore contribute financial support to these efforts.

The Canadian case provides a best practice example of the use of multi-stakeholder policy formulation. By the 1990s, environmental and other public concerns about the mining industry had created an uncertain policy climate. In response, the industry and federal government cooperated to launch the WMI, a year-long process resulting in an Accord signed by stakeholder representatives to guide future government policy. The scope was comprehensive, covering everything from tax to environmental policy, and involved representatives of the federal and provincial governments, the industry, environment groups, labour unions and indigenous communities. Not only did the accord create guidelines for politically sustainable mining policies, the WMI process also fostered long-lasting relationships and partnerships across stakeholders.

3. How to tax the mining industry

Consider geological features affecting profitability when setting tax regime.

The profitability of a given mining project highly depends on the quality of the deposit. High-grade deposits, with high concentrations of the target mineral have more limited production costs. Thus, the government can tax these projects at higher rates, while still leaving enough profits to justify TNC investments in mine development.[1] It is important for countries to have adequate information on their geological potential so as to be able to set their tax rates at optimal levels. Mineral-rich developing countries with limited administrative capacity and mining expertise can rely on technical assistance from international organizations such as the World Bank, as well as bilateral development agencies.

Canada and Chile have both tried to set their taxation levels according to the quality of mineral deposits. In most Canadian jurisdictions, base metals and gold are subject to lower tax rates than other minerals, due to historically high production costs. On the other hand, the discovery of highly profitable diamond deposits in Northern Ontario prompted the government to create a separate and higher tax on diamonds, without which it would have foregone significant rents. In Chile, the recently imposed specific mining tax applies higher tax rates to companies with higher levels of output. This design ensures that the government takes a larger share of the profits of higher production copper mines, which are typically those extracting very concentrated (i.e., high quality) deposits.

Prioritize profit-based taxation, yet combine this with proactive tax enforcement and management of financial risks that the government faces.

Since mineral deposits are typically property of the government, many countries have traditionally charged a royalty or tax based on the volume or value of output. However, profit-based

royalties or taxes, which apply a rate to a company's net income, not their level of production, have several distinct advantages. By sharing some of the financial risks facing mining investors, it improves investment attractiveness of a jurisdiction. It also automatically adjusts, to a certain extent, for changes in project profitability due to factors such as high mineral prices.[2]

Nearly every Canadian jurisdictions has moved towards this form of taxation in recent years. For years, Chile relied exclusively on corporate income tax (a form of profit taxes) as a source of revenue from mining activities. Its recently imposed specific mining tax can also be broadly characterized as a tax on mining profits, although certain tax deductions under the general income tax regime are not applicable.

The use of profit-based mineral taxation must be combined with strong tax enforcement measures. Profit-based taxes can be more complicated than those based on production, due to the need to accurately calculate eligible tax deductions and distinguish mineral income from other streams of income. Until recently, Chile experienced problems with companies manipulating transfer prices and the use of loans from parent companies to limit their income tax liabilities. New rules for transfer pricing and borrowing from related companies have helped address these loopholes.

Given the relative size of the copper industry in Chile, it makes up a substantial portion of government tax revenues. The exposure of the government to higher levels of financial risk due to profit-based taxation makes tax revenues highly volatile. To address this, the country has maintained a fund to stabilize government budgets. Fiscal surpluses above a certain level are automatically deposited in the fund, which can be drawn on in times of low copper prices.

Due to tax enforcement issues and financial risk exposure, profit-based taxes or royalties may not be ideal for all situations. Mineral-rich developing countries that lack capacity to administer complex tax regimes and to develop effectively managed public

investment funds may want to resort to production-based taxation, which is easier to enforce and provides a more stable revenue stream.

Provide tax deductions and exceptions that allow capital costs to be recuperated quickly and that recognize the cyclical nature of the industry.

Many mining projects have long investment horizons and project lead times. There are large upfront expenses and investments related to exploration and mine construction. As a result, it may take years before production begins, and even longer before capital costs can be recovered. Moreover, mining projects are exposed to volatile mineral prices. Special tax deductions and exceptions for the mining industry can be used to accommodate these issues and improve the competitiveness of a jurisdiction. Both Canada and Chile use a variety of these, including:

- Accelerated depreciation, which allows mining projects to recover their capital costs in the early years of mine production;
- Carry-forward of exploration expenses to be deducted from tax liabilities once a mine is in operation;
- Carry-forward of losses, which allows firms to accumulate losses incurred during times of low prices to reduce their tax burden when prices recover;
- Reduced import tariffs on foreign capital goods not available locally, such as equipment and machinery for mine construction and operation.

4. How to encourage industry efficiency and local enterprise development

Rely on the capabilities of global mining TNCs for mineral production.

Recent years have seen major consolidations among mining TNCs, and the emergence of a handful of global leaders involved in the majority of large-scale mining projects. Compared with most national firms, these companies have higher levels of technical expertise, easier access to project finance, and possess significant economies of scale. Given these advantages, mineral-rich developing countries may need to rely on them for mine construction, production and processing. This does not preclude the development of competitive domestic mining enterprises, but it does caution against promoting them over their foreign counterparts, or protecting them from takeover bids.

Canada, which has historically relied on domestic firms to develop the mining industry, has recently approved the sale of several of its largest mining TNCs to global leaders, including Xstrata, Vale and Rio Tinto. These acquisitions were deemed to provide net benefits to Canada, in part due to the belief that they would be able to undertake higher levels of investment and develop Canada's mineral deposits at a lower cost. This view is supported by industry data demonstrating higher levels of operating profits among foreign affiliates when compared with their Canadian-owned counterparts. In Chile, state-owned CODELCO has been unable to keep up with the level of investment and output growth of private TNCs in the country. This, however, is at least partly related to the high levels of mandatory financial contributions it must make to the government.

Nonetheless, both countries have some major national firms that have become global leaders in their respective markets. These include, notably, Barrick Gold, Goldcorp, Teck Resources in

Canada, and Antofagasta in Chile. These firms have thrived despite their exposure to potential takeover bids under their countries' liberal investment regimes.

The flipside of relying primarily on TNCs for mine development is that the refining and processing of minerals will often not take place locally. As shown in the Chilean case, TNC investments in extraction may be partly motivated by the need to supply foreign refineries and smelters with significant economies of scale. Even in Canada, international competition has reduced employment in certain refining and smelting activities. Absent a strong comparative advantage in this area, government efforts to induce these value-added activities locally through incentives may be prohibitively costly, and local processing requirements could limit investment in the mining industry, resulting in reduced production levels and tax revenues.

Ensure that mineral title and concession laws facilitate competitive mineral development.

Mineral rights in Canada and Chile, as well as many other countries, are typically granted on a first-come first-served basis during the exploration phase. This model opens up the possibility of companies acquiring and holding exploration concessions for speculative or anti-competitive purposes, resulting in reduced industry investment and mine development.

Canada and Chile have dealt with this challenge by attaching various conditions to the acquisition of exploration concessions, while avoiding specific performance requirements. Examples include:

- Imposing regular fees based on the area of exploration concessions to reduce the incentive to accumulate and hold land without developing it.
- Requiring concessionaires to engage in continuous exploration activities. In Canada, this is monitored by

requiring the deposit of exploration results with the relevant public geological agency.

- Limiting the lifespan of exploration concessions. In Chile, exploration concessions are valid for only two years. Renewal is possible for an additional two years, but the land under concession is reduced by half in that case.

Assist the efforts of TNCs to develop local workforce and supplier capabilities, and facilitate the development of mining clusters.

Mining projects are often criticized for their limited links to the local economy, due to their capital intensity and reliance on imported machinery and equipment. However, the cases of Canada and Chile show that mining TNCs will often use local employees and local suppliers to reduce their investment and operating costs. To improve the quality of these local inputs, TNCs often train employees and work closely with suppliers. Foreign TNCs in Chile have made strong contributions in this way. Mining TNCs have traditionally employed local workers, helping them develop mining expertise. Since the 1980s, foreign TNCs have increasingly outsourced aspects of their mining activities to local service providers.

In time, FDI may help create a mining industry cluster. A cluster consists of a mass of related firms that complement each other and produce and share collective goods. Within clusters, there is significant potential for spillovers of knowledge and technology to local workers and firms. In Canada, mining clusters have emerged in several regions; the best example being the extensive networks of firms and suppliers in and around the nickel industry in Sudbury, Ontario. Despite the acquisition of Canadian firms operating in the region by foreign investors, the subsidiaries have retained their sponsorship of local training and R&D programmes. In Chile, the increased outsourcing of mining services by foreign affiliates has led to similar trends in the Antofagasta region in the North of the

country, where cooperation between foreign affiliates and local suppliers and educational institutions has been increasing.

Governments are typically unable to independently create clusters, which depend primarily on associated decisions by firms, workers and local institutions. Public efforts in this area should therefore facilitate co-ordination between private actors through the provision of services. These can include, for example, information on opportunities for TNCs to build linkages with local firms, or public funds for skill development and R&D that firms require but do not have an incentive to produce privately due to their appropriation by other companies.

Specific examples of policy tools employed in Canada and Chile with varying degrees of success include:

- The creation of public-private networks to disseminate information and formulate collective industry action, such as the Ontario Mineral Industry Cluster Council or Chile's National Cluster Council;
- Government cooperation with the mining industry to create specialized training and research institutions. Examples include NORCAT and CANMET in Canada, and CIMM in Chile;
- Public financing of mining R&D, such as the dedicated fund create by Chile to invest revenues from the country's specific mining tax.

The development of competitive clusters may build up a country as a mining hub, making it an attractive place for TNCs to base their regional head office operations. Chile has encouraged mining TNCs to use the country as a regional hub through its 2002 Investment Platform law. This law allows foreign affiliates established in Chile to invest in third countries without being liable for taxes on income generated by these activities. Evidence from

Canada suggests that outward FDI boosts demand for local financial and professional services, and can connect local suppliers to foreign markets through TNC networks. The development of an international mining hub has helped Canada maintain a vibrant mining industry despite declining levels of domestic mineral reserves.

Despite evidence of linkage and cluster development in Canada and Chile's mining industries, policymakers in mineral-rich developing countries should maintain realistic expectations in this area. As Chile's experience shows, many supplier linkages are limited to the provision of basic goods and services to mine sites. Machinery and equipment inputs continue to be predominantly sourced from abroad. While these basic linkages can help spread economic impacts of mining investment through increased local demand and employment, they remain dependent on local mining investment and are unlikely to develop into innovative firms with international operations and broad customer bases.

5. How to improve the environmental and social impact of mining

Require comprehensive EIAs for project approval and ensure government follow-up on commitments by project developers.

Given the unique characteristics of individual mining projects, it is difficult for general environmental laws and regulations to cover all possible contingencies. As a result, countries seeking to develop their mining industry should have in place an EIA process that establishes project-specific standards to be met and maintained through the life of the project.

The Canadian and Chilean EIAs have similar procedures. Project developers are required to submit detailed plans about potential environmental impacts associated with a project, as well as the actions to be taken to mitigate them. These plans are then assessed by the relevant government agency, which assembles a panel of experts for this purpose. The input of affected stakeholders is sought to incorporate additional impacts that are of concern. The

EIA is given a broad scope, allowing consideration of some certain socio-economic issues as well. If the project is approved, a final document is created with legally binding commitments on the part of the developer.

It is important that EIAs cover the full life-cycle of a mining project, including mine closure and environmental reclamation. Mine closure requires the cleanup of leftover toxic substances and active efforts to restore vegetation and biodiversity. As a result, significant financial commitments and plans should be in place from early on. In most Canadian jurisdictions, project developers are required to maintain an investment-grade credit rating or to post a security with a third party trustee.

Another important element of effective EIAs relates to government follow-up on commitments made by project developers. This requires significant institutional resources and expertise. In Chile, to address concerns of inadequate enforcement, the government recently created a dedicated Environmental Assessment Service to takeover the role of monitoring and following-up on EIA commitments. In Canada, many EIAs have led to agreements between government, company and local stakeholders to create a permanent monitoring board involving representatives from each party.

Implement a legal framework that protects the rights of local communities and ensures their participation in mineral development.

Although many TNCs have advanced stakeholder consultation policies, they also require a legal framework that addresses interactions between mining companies and local and indigenous communities affected by their projects. A well-designed framework that outlines the land and resource rights of communities, the duties of companies to consult and seek consent for mineral development, and the role of the government in overseeing these processes, can limit tensions or conflicts that may

arise during the development of a mining project. This works to the benefit of both investors and communities. TNCs lower their exposure to project risks due to dissatisfied local stakeholders, while the latter share the benefits of mineral development and receive compensation for some of the negative effects.

However, as the cases of Canada and Chile show, arriving at an acceptable framework for all parties is a long and challenging process. On the one hand, relations between local communities and mining companies have improved in recent years. In Canada, the courts have identified a "legal duty to consult" indigenous communities when mining companies are seeking to explore or exploit mineral deposits near their lands. Since the mid-1990s, the increased use of legally-enforceable private agreements (e.g. IBAs) between indigenous communities and mining companies have provided stability to many projects and improved the flow of economic benefits to the local economy. In Chile, as demonstrated by the Pascua Lama project (see box III.4), public consultations during the EIA process have given a voice to local communities and provided an incentive for mining TNCs to satisfy some of their concerns.

On the other hand, gaps remain, leading to sub-optimal outcomes for both companies and communities. In Canada, the IBA process is largely unsupervised by the government, sometimes resulting in unequal bargaining power between companies and communities. A large portion of indigenous land claims are unsettled, creating significant uncertainty for mining companies hoping to develop mineral deposits. Moreover, it is not always clear what the "legal duty to consult" entails, and specifically whether it involves a requirement to seek consent from communities. In Chile, the resource rights of indigenous communities remain limited and there are no legal obligations in place for the private sector to consult with them prior to developing mineral deposits. Both countries continue to work towards a more complete framework to address these issues.

Ontario's new mining regime (see box II.6) contains some promising elements. These include:

- Requiring private prospectors to notify communities, submit exploration plans, and acquire a government permit prior to undertaking exploration activities on private and indigenous lands;
- Developing mandatory community awareness programs for holders of prospectors licenses;
- Foregoing State mineral rights over certain private and indigenous lands;
- Requiring government approval of a community land use plan prior to mine development;
- Creation of a government-administered dispute resolution process to address conflicts between indigenous communities and mining projects.

Mineral-rich developing countries should take note of the difficulties associated with impacts of mining projects on local communities and proactively address these issues early on. Ideally, this would be done in tandem with the relevant legislation to introduce private investment into the industry.

Incorporate TNCs with leading environmental and social practices into private sector organizations and government policy processes.

The largest private mining TNCs often follow international best practices in environmental and social performance. Reasons for this include strong regulatory regimes in home countries, scrutiny by non-governmental organizations (NGOs), pressure from major investors, and the need to secure the consent of host governments and local communities for mining project development. Most of these firms therefore abide by a range of self-regulatory frameworks that often go beyond the legal requirements of the jurisdictions in which they operate. Examples at the international level include the

ICMM's Sustainable Development Framework (compliance is mandatory for all 18 corporate members), the International Financial Corporation's (IFC) Performance Standards, and ISO 14001. To level the playing field, mining TNCs have an incentive to disseminate their practices to local firms and government agencies.

Evidence from Chile suggests that mining TNCs have undertaken stricter environmental measures and have had more advanced environmental management practices than their domestic counterparts, often going beyond the level mandated under Chilean law. Foreign TNCs were the first to employ EIAs and mine closure plans in the 1990s and early 2000s. To avoid competitive disadvantages stemming from domestic mining firms employing less stringent practices, and to clarify their own obligations, foreign TNCs pushed for the Chilean government to upgrade their environmental legislation. Environmental legislation passed in the 1990s was partly based on the desire of policymakers to provide a coherent framework for foreign investors. In particular, the new EIA system drew from the experience of voluntary EIAs that TNCs had submitted to the government.

One way to transfer the environmental and social practices of foreign TNCs to domestic firms is by encouraging their membership in local private sector associations. In Canada, the MAC has created mandatory performance and reporting requirements for all its members, which includes foreign mining TNCs. In Chile, foreign TNCs make up a significant share of the private sector Mining Council, which has, in tandem with the government, created a Framework Accord for Cleaner Production to guide future voluntary and regulatory initiatives in this realm. Foreign affiliates may draw off their parent companies' experiences with international best practices and push to incorporate elements into these types of frameworks.

Although mining TNCs party to international CSR frameworks can be expected to import international best practices, this does not preclude the need for government action in this area. Emerging TNCs with limited international experience, or TNCs not

subject to home government, investor, or civil society pressures, require significant regulatory guidance to improve their internal practices. Even companies with the most advanced practices still have an incentive to avoid certain costly regulations that may nonetheless by essential to improving their impact on the host country.

Notes

[1] Although the taxation of mineral rents (i.e., profits that go beyond the level necessary to justify investment in mine development) may not have an effect on behaviour of mining TNCs involved in mine construction and production, it can limit the incentive to engage in exploration activities (Box I.2).

[2] Although profit-based taxes ensure that the state receives higher payments from high-grade deposits or during times of high mineral prices, this does not eliminate the issue of excess mineral rents, which may continue to exist even at high tax rates.

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