

Mine Closure in Latin America:

A Review of Recent Developments in

Argentina, Bolivia, Chile and Peru¹

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CAIP	Chilean Association of Industrial Producers
CAMMA	Conferencia Annual de Ministros de Minería de las Américas (Annual Conference of Mines Ministries of the Americas)
CEPAL/ECLAC	Economic Commission for Latin America and the Caribbean
COCHILCO	Comisión Chilena del Cobre – Chilean Copper Commission.
CODELCO	Corporación del Cobre (State-Mining Enterprise, Chile)
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
IDRC	International Development Research Centre (Canada)
IIED	International Institute for Environment and Development (UK)
MMSD	Mining, minerals and sustainable development Report (IIED)
PNUMA	Programa de Naciones Unidas para el Medio Ambiente (UNEP)
SIA	Social Impact Assessment
TNCs	Transnational Mining Companies
TOR	Terms of Reference

Executive Summary

The purpose of this paper is to offer an insight into existing practices for mine closure as required under the legal frameworks of some selected Latin American countries –Argentina, Bolivia, Chile and Peru- that have been highly successful in attracting investment in recent years. When contrasted with international good practice standards, the report reveals that the mine closure regimes are still in their formative stages, and are well below those standards –with Peru providing a leading example towards the integration of a more comprehensive mine closure regime-. There are important gaps to be filled in every aspect and a specific need to strengthen mechanisms for compliance by introducing financial sureties and closure guarantees, improving access to information and participation processes, and placing the emphasis on pollution prevention. Much more still needs to be done in the region on integrating mine closure policies, especially from a socio-economic perspective, into the regional management plans.

The study identifies a common thread in the legal frameworks for mine closure in the countries under study: a common concern for incorporating environmental regulation without increasing additional costs to the operator in order to be and remain competitive to global mining investment. However, loose environmental regulations contradict the principles of *pollution prevention* and the *internalisation* of environmental costs –implicit in the *polluter-pays principle*- which are inherent to what is regarded as internationally accepted good practice for mine closure. In this vein, there is a conflict between the internationally accepted ‘good practice’ standards for attracting private investment –according to which Latin American countries have ranked as the winners, their solutions being recommended as models of reform in other jurisdictions- and the internationally accepted ‘good practice’ for mine closure –which ultimately increase costs, time and risks to investment.

During the 1990s, the enactment of competitive legal regimes for mining has gone hand in hand with a strengthening of the right to the environment, access to information and public participation rights –most often in constitutional provisions- in the countries under study –and most forcefully in Argentina, Bolivia and Peru-. The recognition of these rights is opening legal avenues for their enforcement by means of judicial actions; ultimately, this may result in the need to enact more stringent laws and integrated regimes for mine closure. There is clearly a need for a better coordination between *international* and *national* practice standards, regulatory and voluntary instruments, and more room and mechanisms to encourage the implementation of best practice standards of mine closure to achieve the best possible results and synergies between the dynamics of *global* investment and the needs of *local* contexts.

1. Introduction

The concept of mine closure is relatively new in Latin America, where the environmental legacies of the mining sector are very visible, as in many countries of the world with a history of mining.² Yet, the region is faced with conflicting challenges: On one hand, to maintain its competitiveness in terms of investment attraction, as Latin America drove during the 1990s the major share of global exploration expenditures,³ based on highly competitive legal frameworks for mining that placed secure, predictable and transparent rules of the game for investors, ensured security of tenure and minimised transactions costs. On the other, to do so while requiring and ensuring compliance with good environmental and sustainable development practice in mine closure. They create an intricate task for law and policy making in the mining sector. The response to these challenges will determine the negative or positive impacts of the current projected and operating mines in the region in the years to come.

The objectives of this paper are: 1) to define what are the existing and required practice standards for mine closure in four countries in the region (Argentina, Bolivia, Chile and Peru, which are either major mining countries or have significant mining potential); 2) to assess if those standards are consistent with ‘good practice’ –in general terms, as outlined under the MMSD Report-, and 3) to identify some of the problems and challenges ahead.

The definition of ‘good’ or ‘best’ practice in mine closure will differ from one interest group to another. However, there are certain minimum standards that must be agreed or imposed upon. This report focuses on the standard practice on mine closure required

² Mine closure exhibits increasing attention in the literature in the region. For instance: a. Campusano, R. *et al.*, *Research on Mine Closure Policy*, IIED/MMSD. January 2002; b. Environmental Law Institute (ELI) “Pollution Prevention and Mining: A Proposed Framework for the Americas” (2000); c. The activities promoted by the joint efforts of several institutes, Canadian IDRC, and Brazilian CETEM resulted in the Iberoamerican Conference on Mine Closure (La Rabida, Huelva, Spain 25-29 September 2000). d. González Zenteno, P., *Tratamiento Normativo de la Fase Minera Post Operacional en los Países Mineros Latinoamericanos y La Planificación del Cierre* (CIID: November 1999).

³ See Appendix I. This report focuses mainly on large or medium-scale mining where major domestic or transnational corporations (TNCs) are involved. Thus, it does not address the problems of small and artisanal mining.

from mine operators in the legal frameworks of the countries under study. Legislation plays an important role in directing the behaviour of those involved in mining towards defined outcomes, and is rooted and motivated in local contexts. This report will assist in understanding the peculiar problems and challenges faced in these contexts.

Standard practices required in these countries may differ from those adopted by TNCs operating at a global level. The large mining TNCs each have a portfolio of mines around the world in different legal jurisdictions. Their portfolios also generally include projects, mines at the construction phase, mines in production, and mines close to the end of their economic lives, and frequently they have been involved with the post-closure issues of a mine. This means that they have a broad understanding of the issues at a technical, financial and legal level. Skills are also being developed on the social and sustainability levels.

From the point of view of these companies, an important issue is that of defining a limit to corporate responsibility.⁴ TNCs are increasingly exposed to international litigation in their home courts if they apply low standards of practice, even if they do so in compliance with local legislation. For such a purpose, and to deal efficiently and effectively with jurisdictional and cost issues in the context of mine closure across their geographical portfolios, it is necessary to institute corporate policies that are applicable across all the jurisdictions in which they work. These policies are generally guided by international concepts of best practice at the mining company's legal domicile. In-house specialists implement these policies at the group's projects and mines. In Latin America, these policies are generally well beyond the legislative requirements. However, to ensure that their exposure to risk is addressed –or their responsibility is limited- there is a desire in the context of mine closure to know what the limit of their financial responsibility will be.

⁴ Many of the mining companies, and especially the TNCs, are public companies. Shareholders require that the executive deals with corporate risk in a way that protects the company from failure. Examples abound on corporate failure due to a poor assessment of risk. Environmental examples include the asbestos legacies around the world.

This paper is structured as follows: Section 2 will address the concept of good practice in mine closure with particular reference to the MMSD standards; Section 3 will provide a brief overview of environmental regulation and sustainable development law and policy initiatives in Latin America; Section 4 will focus on the analysis of the legal frameworks for mine closure in the countries under study; Section 5 will point out at some recent developments on integration initiatives in the region; finally, Section 6 will provide a summary and the conclusions of this study.

2. Good Practice in Mine Closure: The MMSD Standards

The MMSD Report ‘specifically identified that the development of integrated planning for closure requires defining desired *end-of-life environmental, social and economic conditions*’; on those basis good practice for the purposes of this study ‘is that which achieves (or attempts to achieve) an integration of a wide range of component disciplines and approaches to create a predetermined and sustainable outcome’.⁵

It is worthy to indicate here the main goals, actions and tools of an integrated mine closure regime, as elaborated in the aforementioned MMSD study. Mine closure objectives and impacts must be considered from the project inception, the mine closure plan must define a vision of the end results to be achieved and actions to do so, in such a manner that:⁶

- Future public health and safety are not compromised;
- The natural capital will be ensured after the mine closes;
- The use of the site will be beneficial and sustainable after mine closure; this involves land reclamation to restore or rehabilitate the land affected for further economic use;⁷
- Negative socio-economic impacts are minimised, and
- The full social and economic benefits of the project will be captured to develop the region.

⁵ See TOR, *supra* note 1, pp. 1-2.

⁶ MMSD, *Breaking New Ground* (London: Earthscan, 2002), pp. 243-244.

⁷ Hoskin, W., *Mine Closure: the 21st Approach*, 11 (2000).

Key principles and tools of a mine closure regime are:⁸

- *Pollution prevention*. Several actions are necessary in the legal implementation of the principle of preventive action, e.g.: national and international standards have to be honoured; environmental information has to be made accessible; an Environmental Impact Assessment (EIA) has to be conducted, and penalties liability rules have to be applied'.⁹
- Costs internalisation (as a consequence of the general *polluter-pays* principle). Financial sureties are essential tools to achieve this;
- *Public participation* to ensure that all those affected by a project are consulted and there are avenues for dialogue regarding the long-term issues and the end-use of the site.¹⁰

3. Environmental Regulation and Sustainable Development in Law and Policy Initiatives in Latin America

⁸ See some of these elements in MMSD, *supra* note 6, pp. 244-245. See also the review on the main elements of a mine closure regime conducted by Bastida, L.A., *What are the main elements of a mine closure regime? Do Argentina, Bolivia and Chile regulations comply with them?* (Dundee: Unpublished paper, 2002), pp. 7-9.

⁹ Sands, P., *Principles of International Environmental Law* (Manchester: Manchester University Press, 1995), 195-197. The EIA is the most common procedure to assist the project proponent, government regulators and the public to predict and evaluate the potential impacts from a development project, as well as, eventually, to identify mitigation measures and alternative actions. The EIA's conclusions are a tool for planning and decision-making. The effectiveness of the EIA is increased with the use as other tools as Environmental Management Plans and Environmental Monitoring Programmes. See a glossary of environmental concepts and instruments in Appendix II.

¹⁰ See MMSD, *supra* note 6, p. 245.

In most Latin American countries, the environmental agenda had remained a low priority in the face of their political and economic crises throughout the 1980s.¹¹ It is mostly since the 1990s that the context and the impetus for the emergence of environmental regulation in the region have been set by:

- Trends and developments in international law –and the ratification of core international environmental instruments by Argentina, Bolivia, Chile and Peru-;¹²
- Increasing concerns for the negative impacts of mining raised by booming activity;
- The privatisation of State Mining Enterprises;
- Practices (and requirements) brought by international organisations involved in legal reform;
- The continuing objective of providing clear, stable and predictable rules of the game for private investment.¹³

The aim of articulating legal systems that reflect environmental concerns, together with the pressing need to draft competitive legal frameworks for investment represent a typical pattern of legal reform in the sector during the 1990s.¹⁴ The rationale of environmental regulation was to provide the applicable rules of the game, including

¹¹ See MMSD – Regional Partner in South America, *Draft Regional Report South America for MMSD*, Chapter 2, January 2002 at <<http://www.mmsd-la.org>>, p. 19. The websites cited in this report have been checked between August and October 2003.

¹² See National Laws section *infra* in Selected Bibliography.

¹³ In Peru, see Pulgar Vidal, M., “Las Regulaciones Ambientales para la Actividad Minera en una Política de Fomento a las Inversiones en el Perú”, in *Consideraciones de un Régimen Jurídico Ambiental para la Minería en la Argentina*, Estudio analítico No. 5, 1995, Chapter 6, available from <http://www.farn.org.ar/docs/p04/publicaciones4_f.html>. As expressed by the Chilean Copper Commission, the process of enacting environmental regulations ‘has been a response to an ever increasing international preoccupation with environmental issues expressed in the agendas of international organisations such as the United Nations and the World Bank’, <<http://www.cochilco.gov.cl/home/eng/frameset-sustentab.htm>>

¹⁴ Walsh, J. R., “El Ambiente y el Paradigma de la Sustentabilidad” in Walsh, J. R. *et al.*, *Ambiente, Derecho y Sustentabilidad* (Buenos Aires: La Ley, 2000).

those relevant to the privatisation of State-run mines, without compromising the foreign investment desired by these governments. The economic risk to the new owners associated with the acquisition of these assets needed to be minimised in the light of the competition for the available funds from projects in other countries with more investor-friendly mining legislation.

The Latin American countries formally embraced the challenge of sustainable development, as acknowledged in the 1994 *Summit of the Americas*, and as reinforced in the action plan approved in the 1996 *Declaration of Santa Cruz de la Sierra*.¹⁵ These expressly recognise the task of creating an *environmentally responsible and socially sensitive minerals and metals industry*, bearing in mind the key role of mining in the development of the Americas.¹⁶ The Declaration incorporated the mineral sector reform debate being held on a regional ministerial level through the Mines Ministers of the Americas Annual Conference (CAMMA in its Spanish acronym). The more recent 2000 *Declaration of Vancouver* contains a number of recommendations for the implementation of sustainable development.¹⁷ These include considering mine closure,

¹⁵ 1996 *Declaration of Santa Cruz de la Sierra. Plan of Action for the Sustainable Development of the Americas* signed and approved by the elected heads of state and government of the Americas at the Hemispheric Summit of the Americas on Sustainable Development held in Bolivia on 7-8 December 1996. The high level of adherence of the countries of the Southern Cone to international environmental agreements has been highlighted. See Contributions Formulated at the Preparatory Meeting of the Southern Cone for the World Summit on Sustainable Development Inclusion in a Latin American and Caribbean Regional Platform. The region presented at the World Summit for Sustainable Development in Johannesburg, the Latin American and Caribbean Initiative for Sustainable Development which acknowledges the need to undertake regional actions towards sustainable development taking into account the particularities of the region, shared visions and cultural biodiversity. See <<http://www.rolac.unep.mx/reclnat/esp/>>.

¹⁶ Action Plan, Initiative II.5. Initiative 64 established the need to ‘*Incorporate environmental policy instruments that mitigate and remediate the negative effects of local emissions, effluents, solid waste, and land use derived from the processes of production, transformation, transportation, and use of energy and of minerals...*’

¹⁷ The document by CAMMA prepared for the World Summit on Sustainable Development in August 2002 considered the topic of mine closure in the context of sustainable development of such importance that a whole section of their report to the conference was devoted to the topic. Amongst their stated

and a formal plan for closure, from the outset of each project in order to enable mining to contribute to sustainable development.

Although these initiatives are not binding, they reflect the view that the region embraces the challenge of sustainable development in the mining sector. Actual implementation is, however, somewhat patchy and mainly focused on environmental aspects. As stressed by a regional study, the speed in ratifying international instruments in Latin America has been in stark contrast to their limited implementation, due both to internal and external factors.¹⁸ Even if there has been a clear institutional and legal change, and significant developments in terms of environmental legislation and public participation rights,¹⁹ there is still neither a vision nor the reforming potential of an agenda for sustainable development.²⁰ One can say that the region is in the preliminary stages of the transition towards sustainable development.²¹ A similar observation applies to the mining sector, where the region also lacks a comprehensive vision of sustainable development which would embrace mining in all of its aspects.²²

principles on the topic was that ‘mine closure is a fundamental tool to harmonize mining activity and sustainable development. Mine closure must be considered on a case-by-case basis, as no one solution can be applied in general.’ Within their recommended actions were to ‘require governments to develop regulatory standards in law for mine closure’, and ‘identify financing mechanism for mine closure activity’. Another regional initiative is the Expert Group on Mineral and Energy Exploration and Development (GEMEED), created at instance of Chile and Korea as a sub-group of the Asia-Pacific Economic Cooperation (APEC).

¹⁸ See CEPAL/PNUMA, *La Sostenibilidad del Desarrollo en América Latina y El Caribe: Desafíos y Oportunidades* (Santiago: PNUMA, 2002), 25-26. The pages indicated are those of the hard copy. The report is also available from <<http://www.rolac.unep.mx/foroalc/esp/13/finales/CRPSoste.pdf>>.

¹⁹ See MMSD – Regional Partner in South America, *supra* note 11, Chapter 3, 26 and 32.

²⁰ See CEPAL/PNUMA, *supra* note 18, 25-26

²¹ *Ibid.*

²² See MMSD – Regional Partner in South America, *supra* note 11, Chapter 3, 26 and 32

Tentatively, we can draw a line between two phases in the integration of sustainable development. The first one focused on efforts geared towards integrating the *environmental dimension*, and coincides in approximate terms with the setting of a competitive legal framework for investment in the countries under study. It was aimed at establishing clear environmental rules of the game for investment. It is difficult to establish when the second phase starts -as the law and policy initiatives are in a state of extreme fluidity-, but there seems to be a line dividing pure environmental concerns from a more holistic approach to development. It is only very recently that policy initiatives and legislation are attempting to incorporate a broader concept of sustainable development, including not only the environmental but also the social and economic aspects of developments. The status of the debate is reflected in the slow pace of the reform of mine closure provisions in the countries reviewed.

In connection with environmental regulation, there is a clear trend towards the incorporation of the right to a “healthy” and “balanced” environment, together with public participation rights, in virtually every Constitution in Latin America. This is coupled with the enactment of subsequent regulations aimed at the integration of the environmental dimension into decision making:

Constitutional provisions have been implemented essentially by means of two main approaches, as they relate to mining: either by application of a general environmental law applicable to every productive activity (“integral approach”), or by the enactment of specific sectoral provisions (“sectoral approach”).²³ Bolivia and Chile have adopted an ‘integral’ approach –which has been facilitated by its unitary political system-²⁴ while Argentina and Peru have adopted a ‘sectoral’ approach.²⁵

²³ The World Bank has suggested that an integral approach is preferable by means of a ‘environmental government institution which is not tied to a specific sector and which forms part of the overall development planning scheme’. See Bastida, L.A., *supra* note 8, p. 10.

²⁴ See Bastida, L.A., *supra* note 8, p. 10.

²⁵ See further Bastida, E., “Integrating Sustainability into Legal Frameworks for Mining in Some Selected Latin American Countries”. Report No. 120, MMSD project of IIED (2002).

Argentina, Bolivia, Chile and Peru, as well as most other Latin American countries have adopted the EIA as the main regulatory instrument used to integrate sustainability. EIAs are rather well developed in local legal systems, being conceived as a process rather than a document and their goal is “continuous improvement”, in the project’s environmental performance, rather than just getting a permit. They treat the commitments arising therefrom as binding and enforceable.²⁶ In broad terms, the assessment of social impacts and the coordination of public involvement are all included in the EIA system. Mine closure plans and mine closure planning are usually, but not always, a part of these EIAs.

4. Analysis of Legal Frameworks for Mine Closure

4.1 Argentina

Argentina has adopted the concept of ‘human development’ and the principle of intergenerational equity in section 41 which grants any inhabitant the right to enjoy a healthy and balanced environment, suitable for human development, so that productive activities meet the needs of the present without compromising the needs of future generations to meet their own needs. The Constitution deals also with the coordination of national and provincial jurisdictions by providing for the enactment of environmental ‘minimum standards’ at a national level, which can be complemented at a provincial level.

As said before, Argentina has adopted a sectoral approach for the environmental regulation of mining; the 1995 *Law of Environmental Protection of the Mining Activity* provides for the national environmental ‘minimum standards’ for mining and is set as a complementary section to the 1886 *Mining Code*. The EIA covers the prospecting, exploration, exploitation, development, extraction, storage and beneficiation phases, including those activities aimed at mine closure. They all require separate Environmental Impact Reports (‘EIR’), and are reviewed separately for approval. For the closure phase,

²⁶ Danielson, L. “Environmental Impact Assessment for Natural Resource Projects in Latin America”, *RMMLF* 1997, Paper 8.

the operator must file another EIR, or an update or amendment of the existing one to cover it, including measures and actions aimed at ‘environmental rehabilitation, reclamation or adjustment’ and at avoiding environmental impacts after the closure of operations. Though the EIR must include post-closure monitoring, no formal closure plans are required, thus weakening the enforcement of these rules.²⁷

The description and measures for mitigating the socio-economic and cultural aspects must be addressed in the initial environmental impact report.²⁸ Recent policy efforts have been aimed at building up social, economic, political and environmental indicators in order to improve the application of the environmental regulations, and determine the impact of large-scale projects in local communities.²⁹

In order to enforce compliance, the legislation relies on the traditional administrative (from warnings and fines to temporary and definite shutdown), civil (environmental damage reparation) and criminal mechanisms. There is no specific financial surety that addresses mine closure.

As an economic instrument to encourage compliance, there is a special tax benefit set up to prevent and mitigate environmental impact -that will be deductible from income tax of up to 5% of operative costs of minerals extraction and treatment- under the *Argentine Mining Investment Law* N° 24,196; the annual amount depends upon the mining operator’s criteria. The law does not specify if this fund must be used to support other tasks indirectly involved in closure and site rehabilitation.³⁰

Regarding information disclosure, environmental regulations applicable to mining at the national level require the enforcement authority to provide information to whoever

²⁷ Acid mine drainage (AMD), usually a large component of any potential environmental liability, is specifically addressed in the initial EIA, and must include possible treatment and neutralisation measures. Specific standards or best practices on how to deal with AMD are not specified in the regulation. This possibly allows the operator considerable leeway in choosing the appropriate and up-to-date technology and methodologies to address this very serious environmental hazard.

²⁸ Supplementary Norms as approved by the Federal Mining Council.

²⁹ Mining Undersecretariat, *10 Reasons to Invest in Argentina* (Buenos Aires: 2001), p. 21.

requests it regarding the application of environmental provisions.³¹ In turn, the provinces -that have retained the powers to regulate general environmental matters within their own jurisdictions- can introduce public participation mechanisms as long as these do not contradict national law. In this context, a few provincial constitutions and environmental framework statutes have provided scope for public hearings in development projects.³² A major flaw of the public participation system in Argentina is that –at least formally- there is no obligation to pay due regard to the comments of interested parties; this can tend to change if we take into account the rather rapid acceptance of the precautionary approach in judicial precedents what paves the way for the holding up of mining projects if there is uncertainty of environmental effects of a project. There have been important developments at a provincial level that reflect an increasingly active and questioning stance towards mining and its impacts. The starting-up of the *Esquel* project in a pristine area in the South-West of Chubut Province by the American company Meridian Gold encountered fierce opposition from the local community, a protest that has elicited numerous expressions of sympathy from other sectors of civil society.³³ Following a campaign promoted by Greenpeace Argentina against the use of cyanide leaching for the extraction of gold in the proposed mining operation, the local community organised a local referendum opposing the mine –opposition based mainly on the *environmental*

³⁰ Roberts, S. *et al.* (2000), “Filling the Void: The Changing Face of Mine Reclamation in the Americas”, in *Iberoamerican Conference on Mine Closure*, *supra* note 1 c., p. 8.

³¹ 1886 *Argentinian Mining Code* (AMC), as compiled in 1997, section 268. Full legal references are included in the Bibliography.

³² E.g., the provinces of Chubut, Jujuy and Mendoza.

³³ There is a list of articles and national and international NGO statements against the project available from <<http://www.wrm.org.uy/paises/Argentina/esquel.html>>. See a Declaration of members of the academic community against the project: <<http://www.unq.edu.ar/theomai/Esquel%20Llamamiento.htm>>.

impacts of the project-.³⁴ The project is currently on hold until the EIA is elaborated and approved and public hearings complied with, as required under provincial law, upon the decision of the relevant *Esquel* Court.³⁵

It is worth noting that rather informal mechanisms have been used as a means of public involvement. As an example, after the closure of Mina Angela in Chubut Province, adjacent community inhabitants requested a provincial deputy to ask a report on the environmental impacts produced by the mine closure.³⁶

We will assess these legal developments in section 6 *infra*.

4.2 Bolivia

The 1995 constitutional amendment of Bolivia did not include any explicit provision to sustainable development concepts or environmental rights, but these have been provided in the Environmental Act.³⁷ The Bolivian environmental legal framework for mining is provided by the 1997 *Mining Code*; the 1997 *Environmental Regulation for Mining Activities*, and the 1992 central regulations of the 1992 *Environmental Act* and the 1992 *Environmental General Regulation*. The regulatory regime is very comprehensive and detailed, comprising specific regulation for the environmental management of mine closure and reclamation procedures.³⁸

³⁴ See the terms of the campaign at <<http://www.greenpeace.org.ar/>>. The core criticism point at the benign environment for foreign investment in mining in place in Argentina that have encouraged this type of project, and the environmental impacts of the project.

³⁵ Esquel Civil, Commercial and Labour Court, *Villivar, Silvana N v. Provincia de Chubut y otros s/amparos/appeal*, 25 April 2003.

³⁶ See Draft Resolution 1748. Request of information to the Executive Power on the environmental impact produced by the closure of Mina Angela in Gastre District, Province of Chubut. B.A.E. 6) (T:P: 30) 2001), at <<http://www1.hcdn.gov.ar/dependencias/cmineria/proyectos.htm>>. See also <http://www.diariojornada.com.ar/diario/noticias/2001_04_05_03_58_26.html>.

³⁷ Law No. 1333, 1992.

³⁸ See Bastida, L. A., *supra* note 8, p. 13.

An environmental permit is required to start mining activities; it includes detailed mine closure and land reclamation plans. Concession holders must close down and rehabilitate the area of their mining activities both within and outside the perimeter of their concession area, when they have partly or totally concluded their mining activities, in accordance with what is established in the relevant environmental permit, or if they abandon their mining operations or activities for two or more years. Whenever possible, they must close down and rehabilitate the area of their mining operations while they are still carrying out their mining activities.

The closure actions must be recorded in a special book which is subject to the control of the relevant environmental authorities. The environmental permit -and the mine closure plan- must be updated.

Once the measures to close down and rehabilitate the area have been carried out, and after a post-closure period of three years, during which emissions and discharges have been kept within the permissible limits established in the Environmental Law's regulations and the accumulated residues have shown no sign of instability, the concession holder or mine operator must present a report to the competent Environmental Authority. The report needs to detail the closure, rehabilitation and post-closure actions carried out, and include an assessment of these actions and a description of the current state of the mining operations area. The report has to be accompanied by a favorable judgement from an independent accredited auditor at which time the mining activities will be considered to have been concluded; upon approval, the operator will be considered released of further obligations.

Compliance mechanisms are based on monitoring, control and a sanction regime that ranges from administrative warnings and fines to suspension of activities. No financial surety is required. Due to the significant environmental legacies of Bolivian mining and the will to attract investment, the liability regime provides for the exoneration of responsibility for contamination due to previous mining activities by means of an environmental baseline to be afforded by the new operator.³⁹

³⁹ See reference in Bastida, L. A., *supra* note 8, p. 13.

Bolivia has no provision for addressing social issues through the EIA. Regarding public participation, this has been the subject of special treatment under the 1992 Law No. 1333, Title X, which provides for the establishment of the necessary mechanisms and procedures to guarantee active information and participation rights, including public hearings and under the 1993 *Law of Public Participation*, which acknowledges the right of rural communities, indigenous towns and local meetings to participate and to promote environmental actions.⁴⁰

4.3 Chile

The 1980 *Political Constitution of Chile* enshrined in narrow terms the ‘*right to live in an environment free of pollution*’, an approach that has been broadened with the enactment of the *Framework Environmental Law* in 1994.⁴¹ This law adopted a ‘central’ approach to environmental regulation; consistently, there is no specific regulation on mine closure. References to the closure phase are general throughout the law and its regulation, as well as in Mine Safety Regulations and no formal closure plans have been established, although there is a draft law on mine closure under discussion.⁴²

Nevertheless, the detailed regulation of the EIA requires the approval of a plan that must include closure actions in the case of mining developments. The EIA must include a description of the closing phase and/or abandonment and a baseline study –depending on the scale of the project.⁴³

⁴⁰ 1993 *Public Participation Law* No. 1551. Article 7 states that "The Basic Territorial Organisations are entitled to the following:" ... ‘b) to participate and to promote actions related to the administration and preservation of the environment, the ecological balance and sustainable development.’ ‘Basic Territorial Organisations’ are defined in Article 3 as ‘rural communities, indigenous towns and local meetings, organized according to their uses, customs or statutory dispositions.’

⁴¹ 1994 *Framework Environmental Law* No. 19,300; EIA Regulations only mentions closure briefly in Article 12 c.5). In the updated 2002 EIA Regulations, closure is also only briefly addressed in Articles 2 b); 12 c.4) and 12 g).

⁴² Thus, it is the first productive sector attempting to comply with the full cycle of a project in Chile. See <http://www.minmineria.cl/>.

⁴³ Article 12 2002 EIA Regulations.

The sanction regime is the traditional one; there is no financial surety. Law No. 19,300 establishes citizen participation, setting forth the responsibility of national and regional environmental agencies to establish mechanisms to ensure the informed participation of the community in the assessment process of the Environmental Impact Study (“EIS”) submitted thereto. Participation under Chilean law basically consists of access to information, the publication of an abstract of the EIS in the official government gazette and in newspapers with a general circulation within 10 business days following the submission of the study being mandatory. Non-Governmental Organisations and individuals who can be affected directly by the project are allowed to learn about the EIS contents and the terms of documents, and to submit their objections or comments within a certain time following the publication on the EIA. If objections or observations submitted are not duly considered or weighed in the qualifying resolution approving the EIS, action may be brought challenging the resolution. Although it is positive that the law incorporates a mechanism to include the observations of those affected by the project, the approach has a few shortcomings, being rather late in the project timetable. It has been further argued that the means of publication can prevent isolated communities from getting timely access to this information.

This loose environmental framework for mine closure has coexisted with in-house environmental policies adopted by the large TNCs and the State mining company (CODELCO) that generally contain reference to closure issues. The Chilean public sector operations defined explicit environmental policies in 1990, and subsequently, modern environmental management practices were adopted relatively quickly. CODELCO established an Environmental Management Unit within the corporate structure whose functions include development of policy and guidelines, the coordination of the work of the corporate divisions, control of implementation of environmental goals and objectives and compliance with environmental regulations.⁴⁴

The Chilean Association of Industrial Producers (CAIP) produced an environmental policy in 1989, which has had a positive effect on the environmental performance of private sector mining. Environmental management practices were introduced first by the

⁴⁴ As recently as June 2003, Codelco has adopted a new sustainable development policy that incorporates a broader concept of sustainable development.

larger companies, based on international standards. These are often more stringent than the requirements of Chilean law.⁴⁵ Medium and small mining companies, however, generally do not apply environmental management practices.

The Chilean system has therefore evolved as a voluntary corporate-led EIA system. This means that implementation of an EIA is frequently done using environmental management systems such as ISO 14000 that integrate the environmental aspects of the total mining cycle into the decision-making process and is based on a cycle that periodically reassesses progress allowing for continuous improvements in the system. The ISO 14000 system does not, however, address the socio-economic aspects of mine closure. One way that this is being addressed in Chile is by the setting up of foundations such as that for the *Escondida Mine* whose purpose is to ‘*build a legacy appreciated by the community, developing a practical concept of sustainable mining that is projected beyond the useful life of the mine*’.⁴⁶

The legal and regulatory experiences in Chile are often seen with interest due to the impressive success of the country in terms of mining production and investment attraction. This is why it is worthy to pause here to analyse a number of reasons that might be put forward to account for the existence of the loose regime of mine closure in this country –and the holding of the draft law on mine closure–, most of them arising from unique circumstances in the Chilean context. Firstly, it is the overall argument that less stringent environmental regulations were considered appropriate in order to attract foreign investment in the 1980’s. Investment surged between 1990 and 1994 partly as a response to this and other more important issues.⁴⁷ Secondly, the vast majority of Chile’s mining occurs in the north of the country where it is very arid.⁴⁸ This aridity means that acid mine drainage, generally considered to be one of mining’s major environmental legacies, is not considered to be a serious concern. Thirdly, these northern areas are very

⁴⁵ Centro de Investigación y Planificación del Medio Ambiente (CIPMA), *Environmental Impacts of Trade Liberalization and Policies for the Sustainable Management of Natural Resources: A Case Study on Chile’s Mining Sector*, 1999, Annex VI.

⁴⁶ Fundación Minera Escondida. Available from
<<http://www.fme.cl/FME/otrosarticulos/mem2001esp/paginas/presentacion.html>>

⁴⁷ See CIPMA, *supra* note 45, p. 22.

⁴⁸ *Ibid.*, pp. 15 and 38.

sparsely populated. This very low population density in these northern areas means that there is less societal oversight and pressure –as occurs in some of its neighbours, such as Peru and Bolivia. Also, in terms of population affected, the environmental impacts of mining are considered to have lesser importance than desertification, erosion, urban growth and water pollution from waste water at the national level.⁴⁹ Fourthly, the copper industry has until recently been dominated by the State-run CODELCO, in which case the environmental liabilities generated will in any event revert to the State. Fifthly, private sector mining of the large world-class copper deposits in northern Chile is being done by the larger transnational mining companies, there is a tendency towards the transfer of internationally recognized best practices by these companies to their mines and projects. This means that the concept of a “social license” to operate, and that of sustainable development, being considered as important issues by the companies, are leading to the involvement of local stakeholders in those issues of relevance to them at a much earlier point in the process on mining projects, and their integration into decision-making process on mines that are in operation. This includes the issues associated with mine closure. Finally, there is very little experience of mine closure in Chile, since very few mines have been closed.⁵⁰

It is noteworthy that Chile is experimenting with the development of sustainable clusters of economic development in and around the major mining regions that have the potential to generate productive activities even without the mining sector. To this end, local and regional ‘dialogue processes’ have been formed to bring together the larger and medium-sized mining companies, local and regional governments, and representatives from communities, local industry and commerce, academia, and training institutions.⁵¹ This can provide a suitable forum to ensure the participation of all actors affected by a project in mine closure planning.

4.4 Peru

⁴⁹ *Ibid.*, p. 40.

⁵⁰ *Ibid.*, p. 36.

⁵¹ World Bank and International Finance Corporation, “It’s Not Over When It’s Over: Mine Closure Around The World”, available from <<http://www.worldbank.org/ogmc/files/notoverwhenover.pdf>>.

The 1993 *Political Constitution of Peru* recognises the right of every person ‘...to enjoy a balanced environment suitable for the development of life’. The Constitution stipulates that the State will establish the national environmental policy, and it will promote *sustainable use of its natural resources*. This constitutional provision has been implemented by means of the 1997 *Organic Law of Sustainable Use of Natural Resources* No. 26821.

Peru had initially embraced a central approach by application of the 1990 *Environment and Natural Resources Code*. However, firm opposition to this Code (which Chapter XII was devoted to the regulation of mineral resources) resulted in its modification, and the adoption of a sectoral approach,⁵² although more recent developments suggest a move towards the implementation of a national system of environmental impact assessment.⁵³ The 1991 *Law for the Promotion of Investment in the Mining Sector* abrogated the provisions on the *Environmental Code* relating to the mining industry, incorporating instead a specific set of environmental rules for mining investment.⁵⁴ Similar rules were also incorporated into the *Single Revised Text of the General Law of Mining*, which constitutes the core piece of environmental regulation for mining in Peru.⁵⁵ The Ministry has also formulated a set of non-binding management guidelines at a national level.

Closure plans must be a part of an EIA or an Environmental Adjustment and Management Programme (“PAMA” in its Spanish acronym). PAMA is a tool applicable to on-going operations in the production and operational stage which serves as monitoring plans, as special emphasis has been placed on the adjustment and management of ongoing operations. PAMA can be the basis for a “stabilisation agreement” between the operator and the Ministry of Energy and Mines so as not to set

⁵² Gonzales, C., “Recent Development in Peru’s Environmental Law and Policy: Its Impact on the Mining Industry”, *The Dundee Yearbook of Natural Resources Law* (Dundee: Center for Energy, Petroleum & Mineral Law & Policy, First Edition, 1997), p. 110.

⁵³ 2001 Law No. 27,446, *National System of Environmental Impact Assessment*.

⁵⁴ 1991 *Law for the Promotion of Investment in the Mining Sector*, Legislative Decree N° 708.

⁵⁵ *Single Revised Text of the General Mining Law of Peru* (Supreme Decree N° 014-92-EM, 1992), which Title Fifteen is regulated by the Supreme Decree N° 016-93-EM, 1993 *Regulations for the Environmental Protection of Mining and Metallurgical Activities*.

further requirements on the operator as long as the approved programme is complied with.

Up to this year, there was a specific non-binding document on the Guidelines for Mine Closure and Abandonment, while the Environmental Guidelines for PAMAs also include a chapter on the Closure Plan.⁵⁶ A law specifically addressing mine closure, the 2003 Law Regulating the Closure of Mines,⁵⁷ has very recently been promulgated. This is the first law in the region that specifically covers financial provisions for mine closure.⁵⁸ In effect, article 6 sets forth that the operator needs to constitute an environmental guarantee that covers the estimated cost of the Mine Closure Plan. The cost and proposed method of setting up the environmental guarantee should be established as part of the elaboration of the Mine Closure Plan (Article 5) which should be presented to the authorities within one year of the authorization of the EIA or PAMA (Article 7). The various methods that are acceptable as guarantees are covered in Article 11 of the Law.⁵⁹ The gradual release of the funds after completion of the closure requirements will be done by the competent authority as set out in the regulation of the Law, which remains to be published.⁶⁰

Regarding public participation, in Peru public hearings should be held prior to the approval of the EIA.⁶¹ The effectiveness of this mechanism has been questioned,

⁵⁶ See Gonzales, C. *supra* note 52, p. 115.

⁵⁷ 2003 Law Regulating Mine Closure No. 28,090.

⁵⁸ Article 1 of Law No. 28,090 states that "... constitution of the corresponding environmental guarantees that assure the fulfillment of the associated investment ...".

⁵⁹ Article 11 of Law No. 28,090 states that "The mining holder will constitute guarantees in favor of the competent authority to cover the costs of the rehabilitation measures for the periods of operation of Final Closing and Post Closing which article 5 of the present Law refers to, by means of one or several of the following modalities: 1) those contemplated in the General Law of the Financial System and of the System of Insurance and Organic Law of the Superintendence of Banking and Insurance (Law No. 26,702). 2) cash, by means of a deposit of money in the Financial Institutions, according to that set out in the Regulation of this Law. 3) the Trusteeships pointed out in the articles 241 or 274 of the General Law of the Financial System and of the System of Insurance and Organic Law of the Superintendence of Banking and Insurance (Law No. 26702). 4) those foreseen in the Civil Code, to the satisfaction of the competent authority. At the conclusion of the rehabilitation measures the competent authority will proceed, under responsibility, to liberate the guarantees, according to what is established in the Regulation of the Law."

⁶⁰ Pursuant to the Second Complementary Article of the Law No. 28,090, the regulation of the Mine Closure Law will occur within 60 days of the publication of the Law, which was on 14th October 2003.

however, since individuals are not guaranteed participation in the hearings, questions may only be posed in a written format and the authorities are not required to consider the contributions made at the hearings.⁶² Hearings are held in Lima, the capital, and at a location near to the project. The *Tambogrande project* has been a lightning rod on public participation in the EIA process, with closure issues -such as acid mine drainage- of major importance in this area that is home to a thriving export-orientated agricultural industry, especially in limes and mangoes.⁶³

The EIA is available to the public -at its own cost- from the Ministry of Mines and is usually available on the Ministry's website. If an information request is denied by the Ministry of Mines, a "*habeas data*" action, based on the constitutional guarantee of access to information, may be brought against the authorities.

The new Mine Closure Law also has a provision (Article 13) that requires publication of the Mine Closure Plan and the submission of copies of the published Plan to the regional-, provincial- and district authorities within the ambit of the mine closure activities.⁶⁴

Peru is at the moment going through a process of decentralisation. As can be deduced from the provision for the supply of information to the public, this process is bound to gain momentum and increase the ability of local authorities to influence the debate about projects in their regions, and consequently that of their electorate. This process is still evolving, but will undoubtedly affect the course of policy in the country.

⁶¹ Pulgar-Vidal, M., and Aurazo, A., (eds.) *Mejorando la participación ciudadana en el proceso de evaluación de impacto ambiental en Minería* (Lima: Sociedad Peruana de Derecho Ambiental, 2003), pp. 95 to 102, deals in detail with public participation in the Peruvian mining industry.

⁶² See ELI, *supra* note 2 b.

⁶³ The agricultural nature of the area is reported in the web page of Tambogrande at <<http://www.tambogrande.org.pe/titulares.htm>>.

⁶⁴ Article 13 states that 'Information to the Community. The mining operator will publish the Mine Closure Plan, subject to the approval of the Ministry of Energy and Mines, in the *Official Gazette "El Peruano"* and in a newspaper of the capital of the respective region or of national circulation. The mining operator will send a copy of the publication to the regional, provincial and district authorities in whose jurisdiction the works described in the Mine Closure Plan will be carried out. NGOs and affected individuals will be entitled to formulate observations in writing which are properly based on the Mine Closure Plan.'

The new legislation has had an enormous effect on Peru's mining industry since the draft regulations to the law were published in April 2003. Many companies have shown a vast interest and urgency in developing and implementing mine closure plans before the new law comes into force.⁶⁵

It is noteworthy that companies seen as 'good corporate citizens' in Peru such as *Compañía Minera Antamina* had an environmental bond set up before the *Mine Closure Law* had been promulgated. The mine is also seen as a model of social responsibility in the region with mine closure issues already being addressed in the context of sustainable development with local communities.⁶⁶

5. Some Developments Regarding the Mining Integration Treaty between Argentina and Chile

A hallmark in the design of attractive instruments for investment has been the *Mining Integration Treaty* between Chile and Argentina negotiated during the 1990s and finally ratified in 2000. The goal behind the treaty was to facilitate exploration and mining of deposits that extend along the Argentina-Chile frontier. Free flow of equipment and personnel between the two countries would be possible. Officials believed that the treaty has the potential to boost investment in the mining and energy sectors by as much as US 20 billion in 10 years. Three large projects in different stages of exploration in the border area would benefit from the treaty – El Pachón, Pascua-Lama, and Veladero.

Under the terms of the treaty, the environmental impacts are dealt with using the existing legislation in each country, with the understanding that both parties will promote the

⁶⁵ See BNamericas, "Mine closure regulations move to public scrutiny stage", at <http://www.bnamericas.com/story.xsql?id_noticia=259790&id_sector=7&Tx_idioma=I&id_email=14806402>.

⁶⁶ According to Teck Cominco, one of the four partners of *Compañía Minera Antamina*, closure-related actions are consistent with the internal corporate policies of the project partners and is partially driven by the requirements of international lending agencies. See <<http://www.teckcominco.com/articles/environment/sr2002/part5/ant/antamina.htm>>.

exchange of relevant environmental information.⁶⁷ Under Article 16 on the “cessation and suspension of the mining business”, no mention is made to environmental issues.

The *Mining Integration Treaty* triggered a host of bilateral initiatives between the other neighbor countries of the region.⁶⁸ The primary reason for these accords has undoubtedly been to facilitate trade and investment. However, environmental issues are of concern –many of the natural resources share a similar geography or are multinational resources that therefore require international environmental legal instruments to deal with them.

Mineral deposits of a transnational nature are a relatively common occurrence in Latin America although they have only relatively recently started to be evaluated. It appears that the international mechanisms necessary to deal with mine closure issues still require development. This will no doubt occur as and when the first big deposits of a transnational nature start to reach the end of their economic lives. As the shortcomings of the existing legal frameworks in both countries to ensure sustainable outcomes are noted, there will probably be an increased perceived need to rely on best international practice in mine closure.

6. Summary and Conclusions

The following table summarises the main features of the legal frameworks applicable to mine closure in the countries under study:

⁶⁷ *Tratado entre la República de Argentina y la República de Chile sobre Integración y Complementación Minera*, Article 12.

⁶⁸ See details in Bibliography.

LEGAL FRAMEWORK APPLICABLE TO MINE CLOSURE

	Argentina	Bolivia	Chile	Peru
Constitutional Provisions	<p>National Constitution as reformed in 1994, Article 41 and concs. '<i>right to a healthy environment, that enables human development</i>'</p> <p>-Duty of the State to <i>provide for the protection of the environment, the rational utilisation of natural resources, the preservation of natural and cultural heritage and the biological diversity, and environmental information and education</i>'</p>	1967, as amended in 1994	1980 Political Constitution, Article 19 No. 8: ' <i>right to live in an environment free of pollution</i> '	<p>Political Constitution as amended in 1993 Article 22, 2: '<i>every person has the right...to enjoy a balanced environment suitable for the development of life.</i>'</p> <p>Citizen's participation in the approval of EIAs is contemplated.</p> <p>Article 67: the State will establish the environmental national policy, and it will promote <i>sustainable use of natural resources.</i></p>
Mining Code	1886 Mining Code as revised and compiled in 1997	1997 Mining Code	1983 Mining Code	1980 Mining Code 1991 Amendment 1992 Compiled into Single Unified Text
Applicable Environmental Law	<p>Sectoral Approach</p> <p>Law 24,585, 1995 Law of Environmental Protection for Mining, incorporated to the Mining Code</p> <p>Clause 14 <i>Federal Mining Covenant</i>, Law No 24,228</p>	<p>Integral Approach</p> <p>1992 Environmental Law. Articles (70, 71, and 72) pertaining directly to Mining Activities</p> <p>1997 Environmental Regulation for Mining Activities</p>	<p>Integral Approach</p> <p>1993 <i>Framework Environmental Law</i> 19,300</p> <p>Decree No 30 (1997), Ministry, Regulation of the Environmental Impact Assessment System, replaced by:</p> <p>2002 Regulation of System of Environmental Impact Evaluation</p>	<p>Sectoral Approach</p> <p><i>Code for the Environment and Natural Resources</i> Legislative Decree No. 613</p> <p>Regulations for Environmental Protection in Mining and Metallurgical Activities (Supreme Decree No. 016-93-EM)</p> <p>Environmental Regulations for Mining Explorations Activities (Supreme Decree No. 038-98-EM)</p>
Mine Closure Provisions within EIA?	An Environmental Impact Report must be submitted before the closure phase	Mine Closure plan contents defined by specific and detailed technical guidance	Very general provisions in EIA regulations.	With voluntary Closure Guidelines and specific provisions for Acid Mine Drainage
Specific Mine Closure Law	None	None	None	2003 Law 28,090 Regulating the Closure of Mines
Citizen Participation in Mine Closure	<p>Access to information</p> <p>Public hearings depend on provincial provisions</p>	<p>Public participation in general covered within Public Participation section of the Environmental Law.</p> <p>Also specific 193 Public Participation Law</p>	Access to information	<p>SIA within EIA;</p> <p>Voluntary Closure Guideline contains mention of local population health and safety; Citizens participation contemplated in the Constitution, and at national, regional and local level in the Environmental and Natural Resources Code</p>

Financial Sureties for Mine Closure	Not required 1993 Mining Investment Law provides for special tax benefit	Not required. The operator can be exonerated from environmental liability 3 years after implementation of closure plan	Not required	Within Mine Closure Law
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Although far from comprehensively implemented, one can see some common, rather incipient efforts in Argentina, Bolivia, Chile and Peru, with the aims of integrating the closure phase of mining within highly competitive legal frameworks for mining. The concerns have been focused on the environmental dimension of closure, and this has been incorporated within the EIA. Peru has recently moved forward at a faster pace by enacting specific mine closure regulations that provide for financial surety. Bolivian regulation on mine closure is rather focused; it requires a mine closure plan which contents are defined by detailed technical guidance. Argentina requires an Environmental Impact Study specifically for the closure phase. The Chilean framework is rather loose and relies on a voluntary corporate-led EIA system. In none of the three latter countries there are mechanisms as financial sureties or bonds to ensure compliance.

If the required standards are contrasted with international good practice standards, it appears clearly that the mine closure regimes are still in their formative stages, and are well below those standards –with Peru providing a leading example towards the integration of a more comprehensive mine closure regime-. There are important gaps to be filled in every aspect; there is a need to strengthen mechanisms for compliance by introducing financial sureties and closure guarantees, improving access to information and participation processes, and placing the emphasis on pollution prevention. Much more still needs to be done in the region on integrating mine closure policies, especially from a socio-economic perspective, into the regional management plans. The ‘Dialogue Processes’ and sustainable clusters occurring in Chile are likely to be a step towards this goal.

One can observe a common thread in the legal frameworks for mine closure in the countries under study: a common concern for incorporating environmental regulation without increasing additional costs to the operator in order to be being and remain competitive to global mining investment. Many observers have argued that the reason

behind the upsurge in foreign investment in Latin America during the 1990's was generally due to that region's highly competitive legal regimes and security of tenure, and less restrictive environmental legislation and lax enforcement.⁶⁹ It has been further suggested that a more rigorous application of closure laws would have the unintended effect of making some of the mineral industry in Latin America globally uncompetitive.

However, it is noteworthy that loose environmental regulations contradict the principles of *pollution prevention* and the *internalisation* of environmental costs –implicit in the *polluter-pays principle*- which are inherent to what is regarded as internationally accepted good practice for mine closure. In this vein, there is a conflict between the internationally accepted 'good practice' standards for attracting private investment – according to which Latin American countries have ranked as the winners, their solutions being recommended as models of reform in other jurisdictions- and the internationally accepted 'good practice' for mine closure –which ultimately increase costs, time and risks to investment.

As we have been reviewing so far, the enactment of competitive legal regimes for mining has gone hand in hand with a strengthening of the right to the environment, access to information and public participation rights –most often in constitutional provisions- in the countries under study –and most forcefully in Argentina, Bolivia and Peru-. The recognition of these rights is opening legal avenues for their enforcement by means of judicial actions; ultimately, this may result in the need to enact more stringent laws and integrated regimes for mine closure.

The integration of effective and efficient mine closure regimes poses important challenges to the Latin American countries; as developing economies, they are in desperate need of alternatives to foster economic and social development. Often it is a sense of urgency for rapid earnings and economic development, a need for foreign exchange to service debt, the idea that tighter environmental regulation might discourage investment, plus a lack of financial resources, technical skills, and political will which undermines initiative and cohesion, and lead to poor implementation of sustainable

⁶⁹ See CIPMA, *supra* note 45.

development-related laws.⁷⁰ There is clearly a need for a better coordination between *international* and *national* practice standards, regulatory and voluntary instruments, and more room and mechanisms to encourage the implementation of best practice standards of mine closure to achieve the best possible results and synergies between the dynamics of *global* investment and the needs of *local* contexts.

The loss of competitiveness is a valid fear and as Latin American nations continue to strengthen their democratic and economic institutions –and as they start to require compliance with better practice-, it is likely that the imposition of additional closure and reclamation regulations will indeed force many marginal operators out of business. While these closures may cause some initial economic problems, over the longer term the domestic mining sector as a whole will probably be strengthened as the more innovative companies expand and modernise to fill the void created by the departure of the competition.⁷¹

As can be seen from the recent legislation in Peru, the political will to address the financial issues associated with mine closure is starting to take hold in the region. This process is likely to be coloured by each country's local mining industry composition (State, transnational, small- and medium mines, local vs. international) and the evolving international acceptance of environmental sureties integrated into country's regulatory provisions.

⁷⁰ See Bastida, *supra* note 25.

⁷¹ See Roberts, S. *et.al.*, *supra* note 30, p. 9.

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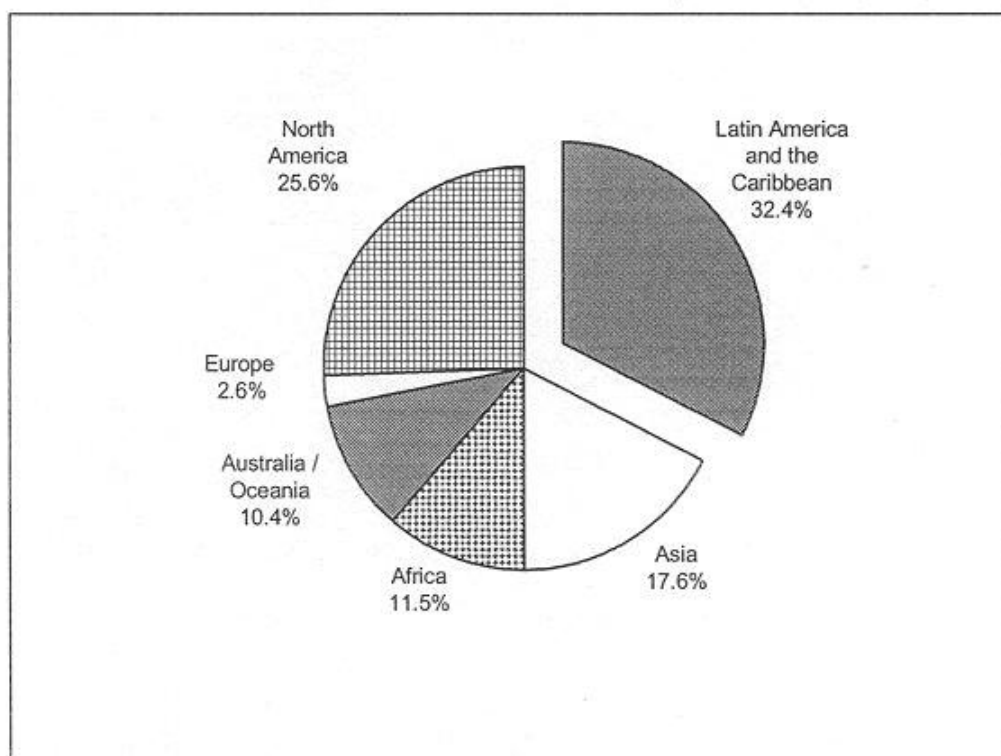
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Appendix I

WORLDWIDE INVESTMENT 1999–2007: GEOGRAPHICAL DISTRIBUTION

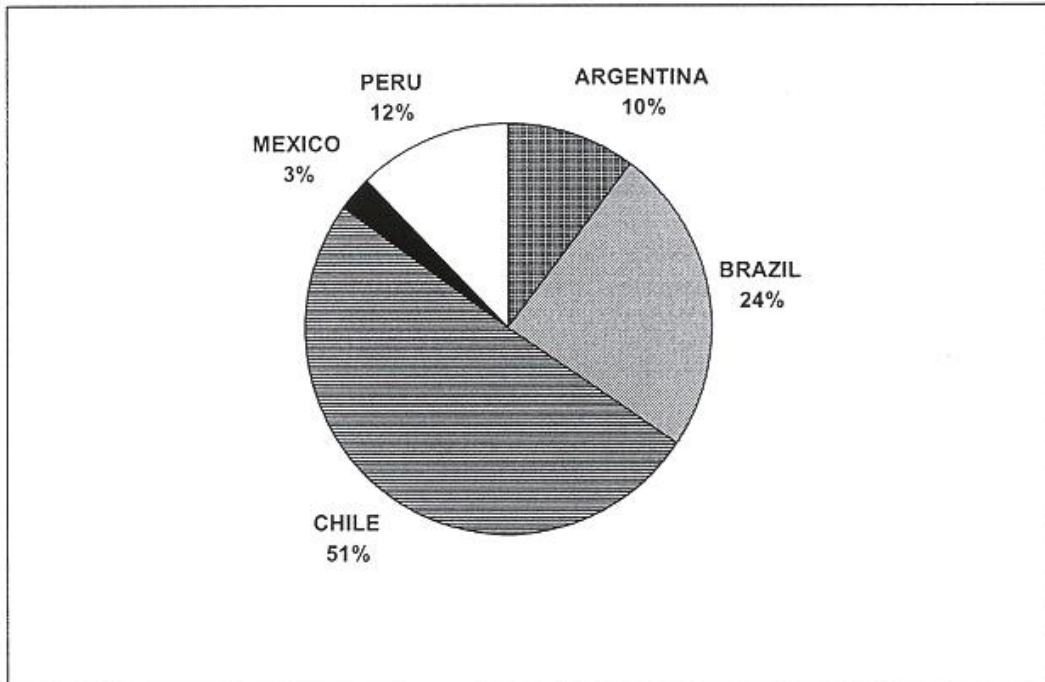
(total = US\$ 51, 279 million)



Source: ECLAC, based on Intertek/Primedia Publications, Engineering & Mining Journal, January, 1999

MATERIALIZED MINING INVESTMENT 1990–1997

(Main countries total = US\$17,379 million)



Source: ECLAC

INVESTMENT IN MINING, 1990-1998 (millions of dollars)

COUNTRY	CUMULATIVE TOTAL 1990-1998	ANNUAL AVERAGE
Argentina	2 288	381
Chile	15 505	1 723
Brazil	4 436	493
Peru	2 925	418

Source: Moguillansky, Bielschowsky and Pini, ECLAC, *Investment and Economic Reform in Latin America*, Santiago, Chile, 2001.

Glossary

Environmental management	Incorporates all the activities necessary to ensure that a mining project is designed, operated and closed in an environmentally sound and socially acceptable manner.
Environmental management instruments	They contribute to the ability of the government and mining companies to control and mitigate impacts. They include EIA, Socio-Economic Impact Assessment (SEIA), Environmental Management Plan, Environmental Monitoring Program, Environmental Audit, Environmental Management System, Mine Closure Plan and Financial Surety.
EIA	It is a procedure that helps the project proponent; government regulators and the public identify the potential environmental impacts of a project before it proceeds.
Environmental Management Plan	It is the documentation of the methods and procedures by which the company will achieve the environmental objectives and targets.
Financial Surety	Mechanism that require a mine operator to provide a financial guarantee of performance before undertaking a regulated activity. Failure to comply with the required standards authorizes the government to collect the amount of the guarantee.
Economic and other Incentives	Laws, policies and programs that provide financial and other advantages to organizations. Incentives may include preferential tax treatment, for example.
Social-Economic Impact Assessment	The objective of the (SEIA) is to provide individuals, community groups, local authorities, government and the proponent with the fullest possible understanding of the social ramifications of a proposed development. Aims of the SIA are forming an early and continuing flow of information, simplifying channels of communication, clarifying objectives of all groups in the community; encouraging public participation and involvement. The SEIA can be carried out as part of the EIA process, or as a stand-alone study
Public Participation	Opportunities for citizens and NGOs to participate in decision-making and enforcement activities, including the opportunity to have access to relevant environmental information and public hearings.
Mine life cycle	Environmental and social requirements must be closely linked to the project timetable and life cycle. For an EIA/SEIA to have a legitimate position in the decision-making process, the issues and implications will need to be established during the concept phase.
Exploration	It involves the collection of geological, geophysical and geo-chemical data to determine the mineral potential of an area. Good environmental management is an important part of any exploration program. This will normally apply only to advanced exploration.
Closure Plan	Mine closure can have a negative impact on both the physical environment and the socio-economic structure of the region. An important aspect of mine planning is the rehabilitation of disturbed lands to a stable and productive post-mining land-form, which is suitable and/or acceptable to the community, as well as socio-economic rehabilitation of the community, thereby ensuring that the benefits of the project are sustainable. The physical and social rehabilitation programs should be an integral part of the mine life cycle.

Sources: UNEP, 2001; Environmental Law Institute, *Pollution Prevention and Mining: A Proposed Framework for the Americas*, Research Report, January 2000, pp. 5-6; Epps, J. and Brett, A., “Engaging Stakeholders”, in Otto, J. and Cordes, J., *Sustainable Development and the Future of Mineral Investment* (Paris: UNEP, 2000).