

# Good practices in mineral resource management

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## EXECUTIVE SUMMARY

Governments seeking to enhance the orderly development of their mineral resources and to maximize the mining sector's contribution to national development goals are faced with a complex task. They must design and implement policies that create --out of a heterogeneous and dispersed minerals endowment-- a reliable source of long-term revenues that can be converted into other forms of capital: financial, physical, human, among others.

The most obvious contributions of the mining sector to the economy are fiscal earnings and foreign exchange proceeds. But the sector also contributes to economic growth through other channels, including increased demand for local goods and services and shared-use infrastructure investments. Countries successful in leveraging mineral resources for development couple equitable tax regimes --which optimize the government fiscal take over the life of each project, while maintaining the ability to attract investments--with policies that protect communities and the environment and prevent the proliferation of enclave type developments.

In general, to optimize benefits from the extractive sector, a country requires, first and foremost, overall macroeconomic stability: predictable policies and fiscal rules for the management and allocation of extractive sector revenues. Another critical need is a robust institutional framework, that assigns clear roles and responsibilities to government institutions and key sector agencies, including the judiciary, legislative bodies, and executive establishments such as sector ministries, regulatory agencies, and state-owned companies, as well as subnational governments.<sup>1</sup>

Few countries have been able to design and implement fiscal rules resilient to sector volatility. At the same time, much has been learned from both successes and failures in governance of the mining sector. Well-designed stabilization policy strategies over the “boom and bust” cycle tend to enable cautious public spending and high-savings during booming periods, which serve to smooth-out crises during the downturn. Mining legislation that offers

clarity and transparency for licensing procedures facilitates the ordered and responsible development of mineral resources. Adequately defined terms and conditions for the allocation of mineral resources and government's participation in the industry help countries attract quality investors, fend-off speculators and “fly-by-night” operators. Specific sector regulations and norms can also facilitate achieving other objectives, such as promoting greater job creation, skills enhancement, compliance with social and environmental obligations, and fostering local economic development, among others.

As it pertains to fiscal regimes, successful countries employ a combination of a royalty payment and corporate income tax --as well as taxes explicitly targeting rents. The approach helps them ensure that mining generates revenue from the beginning of production, and that the government's take predictably adjusts to changing commodity prices. Still, countries implement progressive fiscal arrangements through different approaches and instruments. They may choose to use sliding scales --which vary with prices or on annual profit-to-cost ratio bases-- progressive corporate income taxes, resource rent taxes based on rate-of-return indicators or R-factor sliding scales, and windfall profit taxes --based on a percentage of the difference between a market price and a base price, among other instruments.

This is no small task. Governments benefiting from large revenue flows from the exploitation of mineral resources also face unique challenges: a so-called “resource curse”. Elevated fiscal revenues from the sector may, for example, lead to procyclical government spending and overborrowing when commodity prices are high, causing painful fiscal adjustments in periods of downturn. The exchange rate appreciation and the concentration of investments in the extractive sector may also hinder the competitiveness of non-resource tradable sectors of the economy, a phenomenon known as the “Dutch Disease”. The links between commodity prices and macroeconomic fluctuations call for specific policies aimed at mitigating volatility risks, which are difficult to implement and to maintain.

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1. The quality of government institutions can be measured through celerity in decision-making, the degree and effectiveness of inter-ministerial coordination, corruption controls and accountability, and the quality of enforcement.

The mining sector is also ripe with conflict. Large projects can involve socioenvironmental risks, including pollution and the disruption of local livelihoods. Opposition to mining in Latin America and the Caribbean has too often turned violent –especially when institutions are unfit to adequately input all relevant voices and perspectives into decision-making processes. At the same time, informality and illegality in mining operations has proved to foster corruption, environmental degradation, and other human right violations. Inadequately addressing the complexities of small scale mining affects those most vulnerable, the poor and the marginalized.

Legislated rights to trade, access to resources, technology and financing are often touted as ways by which poverty, environmental degradation, human rights abuses, and conflict can be reduced, while economic development can be enhanced. Specific treatment in the legislation of artisanal and small-scale mining issues, for example, has proved beneficial. Recent regulatory innovations in the sector provide: (i) guarantees of property rights for artisanal miners; (ii) specific licensing procedures; (iii) specific fiscal regime; (iv) measures facilitating the formalization of artisanal miners and combating the proliferation of illicit financial flows; and (v) special provisions for the commercialization of products and measures facilitating access to finance.

A key takeaway from a revision of sector governance experiences is that good norms are not sufficient to ensure resource-based development. Effective administration is equally paramount. Complex regimes and fragmented responsibilities conspire against efficient government. A limited understanding of the principles of mining accounting, for example, can lead to tax loopholes, inadequate depreciation regimes; ring fencing of operations; transfer pricing problems, and other tax avoidance and base erosion mechanisms; tax rules must provide clarity to all stakeholders on the definition of deductible costs for corporate income tax purposes. The design and implementation of effective institutions for sector governance –to tackle mining’s environmental, socio-economic, and territorial impacts— demands addressing both technical and political challenges. Reliable and timely sector knowledge must be accompanied with a vision that is shared by sector stakeholders, including government, mining indus-

try, and other civil society stakeholders on critical priorities and sector bottlenecks.

Developing a shared vision for the mining sector requires knowledge of the environmental, social and cultural conditions in which mining operates, and the integration of effective citizen participation in decision-making processes. Countries have found success in the implementation of territorial planning tools, through which stakeholders can align their long-term development objectives with regional and local action. The incorporation of community priorities and values in sector decisions is critical for long term sector development. Unfortunately, most governments still lack the capacity to design and implement effective stakeholder coordination efforts, encompassing community, public and private sector voices. The boundaries of corporate social responsibility remain fuzzy.

A closer at successful experiences in Latin America and the Caribbean will hopefully encourage authorities and stakeholders to take up the challenge to foster better conditions for long-term, inclusive and responsible resource-based development.

## ABSTRACT

The competitiveness of the mining sector in Latin America and the Caribbean (LAC) has been eroded by the fall in commodity prices and declining levels of foreign investment, associated with rising costs, declining productivity and poor infrastructure. These factors are aggravated by a lack of confidence in the industry's current regulatory framework, resulting from legal insecurity created by frequent changes in the rules of the game, and recurring gaps and overlaps in the legislation. Institutional weaknesses result in lack of coordination and alignment within government agencies - both horizontally across different line ministries, and vertically among the different levels of government. Given this lack of alignment, central government's top-down decisions are becoming difficult to enforce.

Governments benefiting from large revenue flows from the exploitation of mineral resources face specific challenges when designing and implementing macroeconomic policies and fiscal rules for the management and allocation of those revenues. The macroeconomic management must contribute to strengthen the ability to deal with the cyclical nature of mineral commodity markets, and to promote economic diversification to reduce dependence to extractive industries. Given macroeconomic stability, governments should focus on the coherence and predictability of mining policies and the legal and regulatory framework for the sector, as well as the quality of institutions.

Mining in LAC and has been plagued by significant levels of conflict that reflects the new set of environmental, social, economic, and political challenges that confront the sector. Dissatisfaction with mining prevails despite continuous efforts by central governments to attract foreign investment to generate tax revenues that pay for expensive social policies. To overcome these challenges, a coherent mining policy must be formulated, mining legislation must be harmonized with other sectors and intervention of different levels of government aligned. This requires participatory approaches to define integrated legal and institutional frameworks to manage the territories' natural resources in the context of coherent decentralization processes.

This report reviews the policies adopted for the management of mineral revenues in resource rich countries in LAC with the aim of distilling good practices that could be adopted by governments in the Region. It analyses the three building blocks of a mining policy: (i) a clear legal and regulatory framework, including transparent and non-discretionary procedures in the allocation of mining rights; (ii) robust institutions, not only in the mining sector, but also in other related areas; and (iii) a tax regime that attracts investments into the sector and generates a sustainable flow of revenues over the long term. The report calls for the development of a shared vision between the mining industry and other stakeholders to enhance sustainability and harness its contribution to economic development.



# CHAPTER 1 » INTRODUCTION

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## 1.1. MINING AND THE ECONOMY

Aside from the USA and a few other exceptions, mineral resources in most countries are owned by the state. The principle of state “Permanent Sovereignty” over natural resources was elaborated in the United Nations Resolution 1803 in 1962. It states in article 1, “The right of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development and of the well-being of the people of the State concerned.”

Minerals are usually developed through concessions granted to companies or individuals. To enhance the orderly development of the sector and its contribution to the achievement of national development goals, governments must design and implement policies that create - out of a heterogeneous and dispersed minerals endowment - a reliable source of long-term revenues that can be converted into other forms of capital (financial, physical, human, etc.). From this perspective, the most obvious contribution of the mining sector to the economy is thus two-fold: fiscal earnings for the Budget, and foreign exchange proceeds, reducing constraints imposed by external factors on the economy.

The complexity of the task lies in the fact that extractive industries have special features and face distinct challenges that are not found in other industrial investments<sup>2</sup>. To begin with, location is to a large extent dictated by the geological environment. Mineral deposits must be discovered and delineated before they attain any economic value and, to complicate things further, each deposit is in many respects unique. Some of the unique characteristics of extractive industries include:

- » Price volatility makes revenues highly unpredictable;
- » the inherent exhaustibility of mineral resources makes their benefit timeline finite, and their development requires planning in advance for resource

decline and exhaustion;

- » Upstream investments involve long, risky, and heavy upfront exploration and development costs, sophisticated management and specialized technology;
- » The high level of risk created by long and uncertain payback periods calls for stable and predictable long-term macroeconomic, legal, regulatory and fiscal environments;
- » Extractive industries produce substantial rents, highly concentrated and occurring mainly in the form of fiscal revenues. The existence of considerable profits above normal returns on investment is a key characteristic of the sector and is at the heart of policies aimed at capturing a substantial portion of these rents;
- » Mineral deposits are fixed in location and cause substantial adverse environmental and social impacts, creating a strong local footprint particularly on local communities;
- » Their “enclave” character limits the width of their economic linkages, which tend to be relatively weak; with some exceptions, notably for artisanal mining, direct employment creation in the sector is often modest;
- » Investors tend to be weakly integrated into the domestic economy and not always covered by the host country’s mechanisms for checks and balances.

The special features of extractive industries-based resource revenues bring about difficult challenges for fiscal policy design and implementation. Their management requires an integrated approach that includes the design and implementation of macroeconomic and sector policies adapted to the country’s specific features. A rich geological endowment is essential but it is outside the control of governments and, on its own, is not enough to guarantee the sustainable development of a country’s mining industry if it is not associated with more encompassing policies covering other areas of the economy.

First and foremost, a country needs overall macroeconomic stability. When developing a country’s geological endowment, governments must design and implement macroeconomic policies and fiscal rules for the management and allocation of revenues arising from the sector. Effective macroeconomic management must contribute to strengthen the ability to deal with the cyclical nature of miner-

al commodity markets - which cause uneven government revenue flows and fluctuating levels of development activity - and to promote economic diversification to reduce dependence with regards to extractive industries. Common features of these policies and rules include: (i) maintaining macro-economic balances in the face of large and unpredictable changes in fiscal revenues and foreign exchange; (ii) setting fiscal objectives and revenue and expenditure management principles; (iii) laying out a midterm framework to decide how much of the additional revenues generated by commodity booms are to be spent immediately or saved for future generations; and (iv) defining whether and how revenues will be allocated between central and sub-national governments.

In addition, proper consideration should be given to alternative options regarding possible exploitation rates, while policies should be deployed to turn the extractives sector into an engine of economic diversification, adding value to other sectors of the economy through the spin-off of activities it creates, and opportunities opened by non-dedicated infrastructure.

Given macroeconomic stability, the difference lies in the coherence and predictability of national mining policies and the legal and regulatory framework for the sector, as well as the quality of institutions. These factors de-risk investments and reduce the “hurdle rate” for approval of new projects by investors. Sector policies - targeted at maximizing the country’s share of the mineral rents over the long-run, providing adequate procedures for the granting of mineral rights, and defining the role of small-scale and artisanal mining, among others - must strike the right balance between promoting and maintaining sector competitiveness and developing opportunities to enhance its contribution to economic development.

The sustainable development of the mining sector cannot be achieved without a robust institutional framework assigning clear roles and responsibilities to government institutions and key sector agencies, including the judiciary, legislative bodies, and executive establishments such as sector ministries<sup>3</sup>, regu-

latory agencies, and state-owned companies, as well as subnational governments. The quality of Government institutions can be measured through celerity in decision-making, enhanced inter-ministerial coordination, reduced discretion and corruption, quality of enforcement, and sustainable financial autonomy.

Another crucial element of the sector policy is the setup of an equitable tax regime capable of optimizing the government fiscal take over the life of each project, while maintaining the ability to attract investments that generate a continuous flow of revenues over the long term. The tax regime should also contribute to moderate the effects of the “boom and bust” cycles that are common in extractive industries by designing progressive fiscal terms that are effective under low as well high commodity prices.

What type of sector policies contribute to sustainable economic growth? Views diverge on the balance between policies that emphasize macroeconomic stability, trade and investment openness and a sector-neutral role for the state (called “horizontal” policies), and those that favor sectors or firms (also known as “vertical” policies). Horizontal policies aim to enhance the overall competitiveness of the economy. They include: (i) a sound business climate to attract investment and increase trade; (ii) the easiness of doing business, encompassing transparency of procedures, predictability and efficiency of licensing (including access to land, water and environmental licensing), and security of tenure; (iii) the existence of liquid financial markets, including access to long term financing to fund development projects, as well as capital markets for early stages of exploration; (iv) the quality of infrastructure, including increasing water availability and lowering power costs through partnership investments with the private sector (PPPs); (v) the integration of mining investments in national and regional development plans; and (vi) productivity enhancements through reduced barriers to entry, improved labor markets, avoidance of indiscriminate subsidies, and incentives to research and development<sup>4</sup>.

Given the intensity of capital and increasing technological sophistication of the industry, resource rich

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3. Including the finance ministry, the taxation authority, and the central bank; and the economic planning, the environment, agriculture, infrastructure, labor, health, and education ministries, among others.

4. For an analysis of factors facilitating or constraining the implementation of horizontal policies see De Sa (2017).

countries need to put in place specific interventions to avoid the proliferation of enclave type developments with their associated social and economic problems. While the focus of extractive industries has traditionally been placed on the exploration and production segments, attention is now shifting towards using mineral resources as a development platform by promoting cross sector linkages and economic diversification. Beyond mining's traditional contribution to economic growth through the generation of tax revenues and foreign currency, policy makers now seek to integrate mining within broader development strategies and develop links with other sectors<sup>5</sup>. The analysis of these policies is beyond the object of this report<sup>6</sup>.

In addition, as the recent boom in commodities has shown, the human factor is essential for the success of the mining industry. It takes many years of costly efforts to build the base of a competitive workforce in mining, including at managerial level, at high echelons of education (geologists, mining engineers) and at intermediate levels where the role of technical and vocational training can never be over emphasized<sup>7</sup>. Contrary to conventional wisdom, the production of mineral commodities is difficult to manage as it requires strong managerial skills in different areas (technical, financial, marketing, procurement, political, environmental and social). A study conducted in a large sample of advanced and developing countries showed that total factor productivity growth is as high in commodity production as in manufacturing<sup>8</sup>. This has allowed mining to survive during long periods of depressed prices. It also explains why the quantity of economically recoverable reserves has increased over time because of technical innovations in exploration and production. Innovation has always been a key driver of the industry's success, improving efficiencies across exploration, extraction and processing. Since its early

beginnings, the mining industry has continued to find new, better ways of operating. Recent decades have seen ample productivity-increasing innovations at mine sites, such as larger, more durable and efficient shovels, haul trucks, crushers, grinding mills and flotation cells; and better chemistry to improve processing recoveries. Still, compared to other industries, mining is considered to have lower levels of digital utilization<sup>9</sup>. A new wave of technology and innovation will be required, involving increasing automation, data modelling and predictive analytics, autonomous mining systems and renewable energy<sup>10</sup>.

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5. Policies to increase value added to the resources extracted and create economic opportunities and shared value with the communities and regions where the industry operates can include measures enhancing the number of upstream, downstream, and horizontal linkages, while supporting innovation. A key factor in the development of the industry, especially when referring to more value added downstream products, is the availability of reliable sources of energy and water at affordable prices. Infrastructure plays an essential role in mining development.

6. For a more detailed analysis of the nexus between mining and sustainability see De Sa (2018).

7. Australia suffered a shortage of skilled mining sector workers during the boom, leading the government to create a US\$200 million fund for apprenticeship training. (<http://www.miningweekly.com/article/australia-launches-a200m-critical-skills-fund-2011-03-15>)

8. See World Bank (2009).

9. See World Economic Forum (2017).

10. Cosby et al. (2016) present a series of new technologies that are being piloted today and will produce major impacts in the near-to-medium term including autonomous haul trucks, loaders, and long-distance haul trains.

## 1.2. ORGANIZATION OF THE REPORT

This report reviews the policies adopted for the management of mineral revenues in resource rich countries in LAC with the aim of distilling good practices that could be adopted by governments in the Region. It starts with an introductory section presenting an analysis of the channels through which mining can contribute to the national economic development (presented above). The monetization of a country's rich mineral resources endowment will not automatically lead to a sustainable pattern of growth without prudent macroeconomic policies that transform the fiscal revenues generated by extractive industries into financial capital, human skills and physical infrastructure.

Governments benefiting from large revenue flows from the exploitation of mineral resources face specific challenges associated with natural resources led growth. These challenges are addressed on Chapter 2 of this Report. The chapter begins with an analysis of the impact the volatility of commodity prices and moves to a description of prudent macroeconomic policies adopted to cope with their negative impacts that can cause the so-called "resource curse". Prices of mineral commodities are extremely and unpredictably volatile because of rigidities in adapting short term supply to demand, at least in the short term. Variability in government revenues and spending can cause large fluctuations in the real exchange rates, budget deficits and excessive borrowing, making macroeconomic management extremely complex and hindering growth. Volatile fiscal revenues often lead to procyclical government spending and overborrowing, causing painful fiscal adjustments in periods of downturn, which in turn results in lower capital investment and delayed or cancelled projects. The chapter continues with a review of the most common instruments used to improve revenue management in LAC countries, using a case study on Chile to illustrate some good practices adopted in this country.

Fiscal revenues from extractive industries must be properly managed to avoid incurring in a loss of competitiveness of the overall economy caused by exchange rate appreciation and the concentration of investments in only one sector, causing an ad-

verse impact on the non-resource tradable sector of the economy. This phenomenon is often referred to as the "Dutch Disease". It can reduce overall growth and accentuate the vulnerability and dependence on the commodity sectors of the economy, a phenomenon known as the "Resource Curse". The second section of Chapter 2 is devoted to a bibliographic review of the literature on the "Resource Curse" and the analysis of possible ways of avoiding it.

The report then moves on to discuss on Chapter 3 a broad range of good practices adopted by countries in the Region when designing and implementing the three building blocks of a mining policy: (i) the establishment of a clear legal and regulatory framework, including transparent and non-discretionary procedures in the allocation of exploration and production rights; (ii) the buildup of robust institutions, not only in the mining sector, but also in other related areas (like environmental management, financial services, judiciary services, etc.); and (iii) the setup of a tax regime that attracts investments into the sector and generates a sustainable flow of revenues over the long term.

Chapter 3 starts with a review of good practices in the design and implementation of legal and institutional frameworks for mining in LAC countries, using a case study on Colombia to illustrate some of the challenges faced by this country in the implementation of its national minerals policy. The second part of the chapter deals with the challenges involved in designing progressive fiscal regimes and the prerequisites of its enforcement through a strong tax administration. It ends with a small reference to the innovative introduction of progressive royalties in Chile and Peru.

The report concludes with a discussion of the new set of challenges that is affecting the mining industry in LAC and the need for a new vision to facilitate the contribution of the sector to the achievement of the country's overall development objectives.

The research is supported by a concise literature review covering the main relevant theories and body of knowledge on the topic. Short case studies on Chile, Colombia and Peru were included to illustrate good practices in macroeconomic management of sector revenues (Chile), innovations in establishing



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progressive tax regimes for the sector (Chile and Peru), as to support the main argument in the paper about the difficulties in implementing coherent mining policies when facing a lack of consistency of current legislative frameworks for the sector (Colombia).

A large yellow mining truck is the central focus, positioned on a dirt road in a quarry. The truck is viewed from a low angle, emphasizing its massive scale. The background features a vast, open landscape under a sky filled with soft, golden clouds, suggesting a sunset or sunrise. In the foreground, a large, dark metal structure, possibly a conveyor belt or part of a mining machine, is visible, partially obscured by a pile of rocks and debris.

# CHAPTER 2 » MACROECONOMIC MANAGEMENT

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## 2.1. IMPACT OF PRICE VOLATILITY

During the commodities boom, LAC countries recorded high growth rates with a special pro-poor component and recovered quickly after the global financial crisis. Although external factors, such as high commodity prices and relatively loose financial conditions (especially in the United States), helped the Region, the effects of domestic policies adopted in the 2000s were equally important. In terms of macroeconomic management, the focus of domestic policy shifted from stabilization to structural policies<sup>11</sup>.

Notwithstanding, most LAC resource rich countries have not succeeded in smoothing the impacts of the commodities price cycle. Oscillations in key macro indicators – such as growth, investment, current account balance, real exchange rate, net foreign asset position, and stock market returns - have closely followed terms of trade fluctuations during the boom, revealing their exposure to price volatility<sup>12</sup>. As a result, most countries moved from a period of strong growth - characterized by appreciating real exchange rates, soaring prices in non-traded sectors (particularly real estate), and high growth rates of GDP - to painful adjustment and fiscal consolidation.

Taking advantage of the economic boom and the high commodity prices in the of 2002-2007 period, many Latin America countries gained enough fiscal space to react cyclically against the global financial crisis of 2008-2009, a response that contrasts with the Region's previous history of fiscal policy. Helped by the strong recovery of China, such a response allowed the Region's economic contraction to be brief. However, despite the rapid recovery of

commodity prices after 2009, most countries of the Region maintained an expansive fiscal policy<sup>13</sup>. Many countries implemented stimulus measures that focused on inflexible spending categories (particularly wages and transfers) that then proved difficult to reverse. These measures were more expansionary than counter-cyclical and explain why many countries maintained an expansionary stance even when growth returned, moving from “counter-cyclical” to “pro-cyclical” expansion.

Commodity related tax revenues started to fall in 2012, with a particularly abrupt collapse in 2015, resulting in subdued growth<sup>14</sup>, but progress towards fiscal consolidation was slow. Except for a few cases (such as [Peru](#) and [Colombia](#)), most governments continued to increase expenditures. However, diminished tax revenues and increased pressure on fiscal balances and public debt levels reduced drastically the space for counter-cyclical policies and forced most countries into fiscal consolidation, a “pro-cyclical” adjustment to the crisis<sup>15</sup>.

The exceptions were [Chile](#) and [Peru](#) which implemented expansionary fiscal policies to support growth. These two countries managed to adjust more smoothly to the negative shock, because their fiscal institutions (including strong budgetary frameworks or a credible fiscal rule) gave greater assurance regarding medium-term fiscal sustainability. [Peru](#), for example, while exposed to a relatively large positive terms of trade shock, benefitted from a high structural savings rate, a low real exchange rate windfall (resulting from the combination of a heavily managed exchange rate regime and low inflation), a relatively open economy, a concentrated capture of the windfalls by the public sector, and well-controlled public spending.

During the boom, the terms of trade windfalls boosted aggregate demand expansion, pushing current accounts into deficit as early as 2007-2008, well before the steady decline in commodity prices that started around 2012. During the slowdown, the fall

11. See Araujo et al. (2016).

12. In countries like Argentina and Brazil, aggregate domestic demand growth has followed the terms of trade more pronouncedly than output growth, responding to the commodity prices windfall more quickly and more intensely than supply. See World Bank (2016).

13. See Jiménez and Ter-Minassian (2016).

14. After a decade where a boom in commodity prices resulted in strong growth, output in Latin America and the Caribbean contracted 1.4% in 2016, the second consecutive year of negative growth. World Bank (2017).

15. See IDB- Inter-American Development Bank (2016).

in the terms of trade drove the downward trend in domestic demand and economic activity. Despite widespread currency depreciations, the adjustment of current account deficits lagged, in part because foreign direct investment remained stable. However, South America has stopped accumulating international reserves since around 2012. Countries that implemented procyclical policies during the upswing (such as **Ecuador** and **Venezuela**) tend to be those where exposure to commodity shocks increased, as much larger deficits have not been offset by increases in government financial assets<sup>16</sup>. **Argentina** and **Brazil** experienced moderate terms of trade gains, but their effects on domestic demand were magnified by: (i) low structural saving rates and a relatively low degree of trade openness; (ii) a relatively large allocation of the terms of trade windfall to the private sector (specially to lower-income groups); (iii) a relatively high real exchange rate windfall in Brazil; and (iv) a sharp rise in total public-sector expenditure in Argentina.

Given that the private sector tends to use periods of real exchange rate appreciation to increase consumption, countries with fixed or more heavily managed exchange rates (**Bolivia, Ecuador, Peru**) seem to have saved more than countries with more flexible regimes (**Brazil, Chile, Colombia**) that experienced substantially larger real exchange rate windfalls. From a macroeconomic policy perspective, terms of trade gains should be phased into domestic demand only gradually, to allow domestic supply (especially of non-tradable sectors) to catch up with demand without economic overheating and excessive external deficits. More open economies (e.g., **Chile, Peru**) have done better than more closed economies (**Argentina, Brazil**) in this regard, because the excess demand was diverted abroad via imports rather than being contained at home.

In conclusion, the links between commodity prices and macroeconomic fluctuations call for a specific set of policies for resource rich countries to mitigate the risks associated with volatility and to smooth out revenue cycles. A well-designed stabilization policy over the “boom and bust” cycle must include cautious public spending and high savings in the boom period to smooth out aggregate demand.

According to the IDB<sup>17</sup>, good practice to protect against commodity price shocks and to reduce fiscal pro-cyclicality involves the setup of well-designed hedging programs and stabilization and other natural resource funds, saving a larger proportion of windfall commodity revenues. Macroeconomic reforms should involve tools aiming at saving more of the windfalls – such as automatic fiscal stabilizers, stabilization funds, sovereign wealth funds, macro prudential norms, among others – and a review of both spending and taxation policies.

In the case of LAC, this might require legal, and in some cases even constitutional changes, to ensure longer-term fiscal sustainability. In addition, a fiscal rebalancing toward higher levels of investment, including by the private sector, is needed. Greater capital intensity of higher productivity is needed to boost growth, since the depreciation of nominal exchange rates translated into higher competitiveness for only a few LAC countries. Despite advances in reaching many bilateral trade agreements and agreements within subgroups of countries, the region has not truly integrated. Regional trade in intermediate goods is limited, and few firms participate in value chains in the region, limiting their participation in global value chains.

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16. The analysis is from World Bank (2016).

17. See IDB- Inter-American Development Bank (2016).

## 2.2. REVENUE MANAGEMENT

Macroeconomic management in the LAC Region improved dramatically over the past 20 years. Many countries now have prudent and well-functioning macroeconomic and policy frameworks that have helped the Region to keep a more sustainable path and deal with external shocks better than in the past. For example, the introduction of inflation targeting frameworks in [Chile, Peru, and Mexico](#) has strengthened the central bank's mandate for maintaining low and stable inflation rates while increasing the flexibility of exchange rates to adapt to changes in external conditions. The composition of public debt has also changed dramatically, with the largest share now being denominated in local currency and with a longer average maturity.

At the same time, the quality of institutions has improved, as shown by strengthened revenue administration, improvements in public financial management, reductions in budget rigidities, greater transparency, and the introduction of fiscal responsibility legislation, fiscal rules, and resource funds. LAC has also recorded great progress in the social front, as the boom in commodity prices has had a socially progressive effect. The inequality in income distribution, albeit still high, is much lower than in the early 2000s, and poverty rates are less than half of what they were<sup>18</sup>. However, eight of the ten most unequal countries in the world (as measured by Gini indexes) are in LAC<sup>19</sup>.

We will now review the most common instruments used to improve revenue management in LAC countries, using a case study on Chile to illustrate some good practices adopted in this country.

### A) FISCAL RULES

In order to address the challenges that volatile and exhaustible resource revenues pose to fiscal management most resource rich countries in LAC have introduced nonrenewable resource funds and fiscal rules - i.e. multiyear formal constraints aiming to achieve certain numerical values for selected fiscal

variables, such as the fiscal balance, public expenditure, or the public debt. In many cases, such measures were motivated by political economy considerations, to contain spending pressures and enhance the government's credibility.

Many LAC countries have - or have had at some point during the last decade - one or both of these mechanisms: fiscal rules and Nonrenewable Resource Funds (Chile, Ecuador, Mexico, and Venezuela); fiscal rules only (Peru); and Nonrenewable Resource Funds only (Trinidad and Tobago). According to Villafuerte, Lopez-Murphy and Ossowski (2010), their design has varied widely among countries:

» **Chile:** the fiscal rule of 2001 targeting the structural central government balance underwent successive technical refinements over time and was relaxed twice. The Copper Stabilization Fund was later replaced by two other funds: one with flexible rules where overall fiscal surpluses are deposited and from which resources can be drawn if desired, and another with a pre-specified range for annual deposits as a ratio to GDP, respectively the Economic and Social Stability Fund (FEES), and the Pension Reserve Fund (PRF), created to help finance pension and social welfare spending;

» **Ecuador:** three fiscal rules from 2002 targeting the non-resource balance, the rate of growth of expenditure in real terms, and the public debt, were modified and subsequently replaced in 2008 by a non-oil golden rule, and a series of funds which had various operational rules—including trigger rules contingent on actual oil prices relative to budgeted prices, and rigid deposit rules. The last of these funds was abolished;

» **Mexico:** introduced a fiscal rule in 2006 targeting the overall budget balance, and funds with trigger rules contingent on actual oil prices relative to budgeted prices. Both underwent modifications: some expenditures were excluded from the coverage of the rule, and subsequently the rule was temporarily relaxed; the caps on the accumulated resources in some of the funds were suspended;

18. See World Bank (2016).

19. See World Bank (2017).

» **Peru**: the 1999 fiscal rules targeting the overall balance and the rate of growth of expenditure in real terms were modified frequently. The fiscal balance targets and expenditure growth ceilings were relaxed, and some expenditures were removed from the coverage of the spending rule;

» **Trinidad and Tobago**: Nonrenewable Resource Funds with trigger rules contingent on actual oil revenues relative to budgeted revenues; and

» **Venezuela**: 2000 multi-year fiscal rules targeting the current balance, the rate of growth of expenditure in real terms, and the public debt (which have not been implemented); and a Nonrenewable Resource Fund with oil price trigger rules which were frequently modified as circumstances and policy objectives changed.

According to the authors, the overall experience with these mechanisms has been mixed. There seems to have been no obvious link between the presence of fiscal rules and Nonrenewable Resource Funds and the cyclicity of fiscal policy during the recent cycle:

» In **Chile** and **Peru**, fiscal policies were moderately procyclical during the boom, and countercyclical during the slump;

» **Bolivia** conducted fiscal policies broadly similar to those of countries without these mechanisms;

» In **Mexico**, the degree of procyclicality of fiscal policy increased following the establishment of the rule and the funds in the latter part of the boom, and policy was neutral in the downswing;

» **Ecuador**, **Venezuela** and **Trinidad and Tobago** conducted the most procyclical fiscal policies during the boom, and their policies were also procyclical or neutral during the slump.

In conclusion, the introduction of fiscal rules and Nonrenewable Resource Funds alone was not a solution to mitigate the impact of the volatility of commodity prices in LAC, as they were associated with a broad range of responses to the economic and commodity price cycles, including highly procyclical responses. It has proven difficult to design and implement fiscal rules able to endure the volatility

and uncertainty of nonrenewable tax revenues and the rapidly changing economic environments facing resource rich countries. The frequent changes to fiscal rules and compliance difficulties in most countries highlight the complex design, implementation, and political economy challenges associated with the volatility and unpredictability of revenues, and the difficult tradeoffs between rigidity, flexibility, and credibility of the rules. Rigid rules can be easily overcome by events, undermining their credibility, but excessive flexibility can increase uncertainty about the orientation of the fiscal policy.

Based on LAC's experience, the authors suggest the following good practices for the successful setup of fiscal rules to cope with the volatility of commodity prices:

» Targeting the overall balance in commodity dependent countries is procyclical and can result in major swings in expenditure. Targeting non-resource balances can help smooth spending, decouple it from resource revenues in the short run, and reduce procyclicality. The appropriate level of the targeted non-resource balance must consider long-term fiscal sustainability and fiscal vulnerability to resource shocks;

» Some flexibility in the design of fiscal rules, as well as escape clauses, are recommended in countries that are heavily exposed to unpredictable exogenous shocks. Transparent, clear and specific escape clauses for major shocks should be considered; and

» Other good practices include added emphasis on a medium-term perspective, a minimum set of public financial management requirements, and transparency. Consensus and political commitment to the rules are vital for their success.

## B) NONRENEWABLE RESOURCE FUNDS

Managing volatility requires control over the level of aggregate spending and its decomposition into consumption and investment<sup>20</sup>. In terms of consumption, governments must decide whether to increase public consumption or transfer funds directly to citizens. In terms of investment, decisions can involve making domestic public investments (either directly or through incentives to the private sector),

20. See Collier (2011).

or to invest abroad in financial assets, through Non-renewable Resource Funds. To avoid revenue volatility generating corresponding volatility in expenditure, it is important to smooth spending flows. For example, if investment spending faces steep unanticipated reductions, projects will be abandoned unfinished, whereas if it is increased very quickly then project selection and implementation are likely to weaken.

Many countries have established separate funds for resource revenues, either to channel resources for development investment or to promote saving to help address the stabilization and sustainability issues of large, volatile, and exhaustible revenue flows. According to Collier (2011), a Nonrenewable Resource Fund has typically three sets of rules: one determines the size of the flows going into the fund; another protects the accumulated stock of its assets from being dissipated; and the third concerns the composition of the stock. The rules may differ depending on the objectives of the fund. For savings funds, the focus will tend to be on linking any withdrawals to the long-term sustainability of resource revenue spending, and its size will be determined by reference to a policy seeking to keep the wealth in the fund constant. For stabilization funds, the size of the fund will depend on assumptions about volatility of revenues and the average expenditure required by the government<sup>21</sup>. Projections of transactions, as well as accounts of actual spending by these funds and their assets and liabilities, should be presented to parliament as part of the budget process.

Almost all the funds set up in LAC have - or have had - rigid accumulation and withdrawal rules, except for [Chile](#)'s Social and Economic Stabilization Fund. This was based largely on the expectation that the removal of excess revenues relative to some benchmark, or of a fixed share of revenues from the budget would help moderate and stabilize public spending, reduce the room for discretion in fiscal policy, and foster savings. In practice, price volatility has made extremely difficult to set fixed trigger commodity prices or revenues in contingent natural resource funds, as it is very difficult to set estimated

long-term average prices that are supposed to remain unchanged over time.

According to Villafuerte, Lopez-Murphy and Osowski (2010), funds with such trigger rules either had their rules modified frequently and their operations suspended (Venezuela), or after undergoing modifications of the trigger rules were replaced by funds with different rules ([Chile](#), copper stabilization fund), or were eliminated ([Ecuador](#)). Some funds where deposits and withdrawals are contingent on realized commodity prices or revenues relative to the prices or revenues set in the budget have proved more resilient ([Mexico](#), [Trinidad and Tobago](#)).

The evidence of LAC therefore suggests that where Nonrenewable Resource Funds are envisaged, it is good practice to consider funds with flexible rules that are well integrated with budget systems and fiscal policy frameworks.

The Norwegian experience is often presented as good practice in resource revenue management, because it is a virtuous example of well-governed, transparent central budgeting and saving for future generations with a high-yielding investment strategy. The strategy of the Norwegian Pension Fund-Global (NPF, formerly known as the Norwegian Petroleum Fund) has two central pillars: first, it aims at smoothing public spending over time and decoupling it from volatile oil revenue; second, it seeks to replace oil wealth with financial assets, which are expected to grow in value over time, to be able to deal with the expected increase in public spending associated with an aging population<sup>22</sup>.

The Norwegian parliament approved the Petroleum Fund in 1990 and made the first transfer in 1995. Oil revenues are accumulated through a system of royalties, taxes, and state-owned production, and they flow into the central government budget, managed by the Ministry of Finance. All fiscal decisions are made through the central budgeting process, and any budget surplus flows to the fund. Annual contributions to the NPF are much larger than in other countries. The central government transfers all the revenues from petroleum activities to the fund, after

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21. Stabilization funds often set a reference price and make sure that if the resource price exceeds the reference price any revenue collected over and above the reference is deposited in the fund instead of being channeled through the budget. See Cameron and Stanley (2017).

22. See IMF (2007).

covering the nonoil budget deficit, which remains relatively modest. The Ministry of Finance issues guidelines for the investment of the fund's capital. As a small, open economy, Norway has chosen to invest fund assets exclusively in foreign bonds and equity. This strategy reflects the main goals of income generation and risk diversification, but guidelines for ethical investing have also been developed. None of the funds are earmarked for specific projects or benefit sharing. Reporting is transparent and publicly available, and oversight is strong<sup>23</sup>.

The case of Botswana is held out as another example of good practice in a developing country context. Botswana avoided the resource curse by pursuing prudent fiscal policies. The primary mechanism of Botswana's revenue management is not an explicit savings fund or allocation scheme, but rather a solid approach to budgeting: The National Development Plan. The rationale behind instituting this planning process was to stabilize government spending growth so that it would not add to volatility in the economy, and to prioritize spending.

### C) ASSET MANAGEMENT

Mineral resources are by nature exhaustible, which requires planning in advance for resource decline and exhaustion, and the identification of a resource horizon for production. Consideration should be given to the intergenerational distribution of income flows, by deciding how much of the revenues generated by commodity booms are to be spent immediately or saved for future generations (to avoid excessive spending and over borrowing). The appropriate savings rate from such revenues depends on alternative options of possible exploitation rates and the horizon to resource depletion. Collier (2011) notes that a low-income country with a significant resource endowment can expect to enjoy a phase of high economic growth rates, by prudently saving and investing the revenues resulting from the mon-

etization of its mineral assets. As such, it justifies having a lower savings rate in the early period of resource extraction<sup>24</sup>.

Revenues from extractive industries must be managed to avoid causing a loss of competitiveness of the overall economy because of exchange rate appreciation and the concentration of investments in only one sector, producing an adverse impact on the non-resource tradable sector of the economy. This phenomenon is normally referred to as the "Dutch Disease"<sup>25</sup>. Simply put, the foreign exchange inflows resulting from exports of commodities appreciate the real exchange rate and increase the returns to investment of the products exported in relation to other tradable goods, attracting capital and labor to the natural resources sector from other parts of the economy. Higher spending leads to higher prices and output in the non-tradable sector, but increasing wages squeeze profits in economic activities that produce internationally tradable goods (such as manufacturing), resulting in a contraction or stagnation of other (non-natural resources) tradable sectors and an overall structure of the economy concentrated in the production commodities.

Collier argues that the choice of assets acquired with the savings from resource extraction has a high implication on the country's growth rate. Whereas a capital-abundant economy such as Norway should normally acquire foreign assets, a low-income economy should acquire capital domestically. However, a critical stage prior to an increase in domestic investment is to build the capacity to manage it, i.e. capacity to improve the business environment for private investment, as well as to manage the process of public investment: project design, appraisal and selection, implementation, and *ex post* evaluation.

The problem is that a rapid rise in domestic spending in response to a revenue windfall could be inefficient if countries do not have adequate absorptive

23. See Fischer (2007).

24. For a given extraction rate, the shorter the time until expected depletion the higher should be the savings rate, reflecting the principle that the savings rate should rise as resources are depleted. See Collier (2011).

25. "Dutch Disease" is the name generally used to describe a situation where, after a commodity boom, productive resources tend to be relocated away from the Industrial/Manufacturing sector towards both the commodity and the non-tradeable sectors. The additional income generated from sale of natural resources appreciates the real exchange rate and leads to a contraction of the tradable sector. Consequently, the manufacturing sector suffers a contraction while the other sectors are expanding. If the industrial sector experiences a contraction, the potential for sustained long-run growth may be in jeopardy. For a comprehensive description of the effects of the "Dutch Disease" see Eastwood and Venables (1982). For a more recent discussion on policies related to fighting it see Brahmabhatt, Canuto, and Vostroknutova (2010).

capacity, creating supply bottlenecks, drawing resources to the non-traded sectors, appreciating the real exchange rate and weakening the non-resource traded sectors. It is essential to simultaneously build the capacity to manage the large increase in revenues and overcome the political economy factors that will tend to drive the resources towards private hands, often through wasteful projects. Weak institutional capacity and poor governance in the management of extractive industries revenues have led to an overall deterioration of the political and economic conditions in some resource rich countries in LAC, leaving them more vulnerable to revenue capture by vested interests through different modalities of corruption, internal conflict and external shocks. This risk can be at least partly offset by investments in infrastructure, human capital or institutional capacity building that reduce production costs in productive sectors and raise their competitiveness<sup>26</sup>.

In conclusion, it appears that establishing an asset management strategy is an important element of fiscal policy for resource-rich countries that are accumulating financial assets from savings of resource revenues. Good practice indicates that this strategy should reflect macroeconomic goals, like the savings rate, and avoidance of exchange rate appreciation. The spending path needs to be set at a rate that is efficient for the economy. Since a substantial temporary increase in the real exchange rate is liable to be disruptive to the real economy, the appropriate policy response would be to delay much of the increase in consumption to provide the time for domestic production of non-tradable consumer goods to increase. Sector policies targeted at breaking supply constraints could be more suitable than increasing the proportion of savings allocated to foreign financial assets.

## D) CASE STUDY: CHILE

Copper mining has had a major economic impact in Chile<sup>27</sup>. Still, dependency on copper revenues brought the challenge of managing volatility of prices that, historically, impacted negatively the Chilean economy and generated macroeconomic instability. This made the development of exports from other sectors difficult and contributed to instability in employment and inflation.

Since 2001, Chile's budget policy has been based on a strong fiscal rule. The rule seeks to link public spending to long-term expected government revenue by imposing a target on the structural deficit/surplus level<sup>28</sup>. Chilean authorities aim to achieve a budget balance that is corrected for the business cycle and for fluctuations in copper and molybdenum prices. Between 2001 and 2007, a tight structural surplus target of 1% of GDP was established for fiscal policy. The original target was reduced to 0.5% surplus in 2008 and later to 1% deficit to stimulate the Chilean economy out of the recession.

Government can run a deficit larger than the target to the extent that: (i) output falls short of its long-term trend, in a recession, or (ii) the price of copper is below its 10-year equilibrium. A major innovation is that the estimates of the two most important inputs in the breakdown of the budget between structural and cyclical components – trend output and the trend price of copper – are computed by independent expert panels and are thus insulated from the political process<sup>29</sup>.

A structural budget policy was institutionalized in 2006 with the approval of the Fiscal Responsibility Law that law created two funds where excess revenues over the structural benchmark can be saved either for future generations or to create a buffer if prices fall below the reference price. They are re-

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26. See Gelb (2011).

27. This section draws on African Natural Resources Center- ANRC (2016).

28. Structural revenue is calculated by estimating the associated cyclical revenue coming from the difference between the current and the long-term price of copper. Structural revenues are calculated as the difference between actual revenue and cyclical revenue. The theoretical long-term price is constructed based on the forecast of an independent experts committee, with each member presenting their annual price forecast for the next ten years. The reference price, which corresponds to the simple average of the ten-year forecasts of each expert, excluding the minimum and maximum values, is then used as a basis for the fiscal projection in the national budget for the year ahead. See African Natural Resources Center- ANRC (2016).

29. See Frankel (2011).

30. The FEES took over the resources of the Copper Compensation Fund (FCC) created in 1987 that imperfectly corrected the cycle because it was based on regulating the financing of fiscal policy rather than anchoring it to a given goal. See African Natural Resources Center- ANRC (2016).

spectively the Pension Reserve Fund (PRF), created to help finance pension and social welfare spending, and the Economic and Social Stability Fund (FEES), a stabilization fund to help overcome deficits when copper revenues decline unexpectedly<sup>30</sup>. The funds are governed by a strong set of deposit and withdrawal rules underpinned by a fiscal rule that smooths spending over time. Through the FEES, government can finance budget deficits and make repayments of the public debt, largely safeguarding spending against fluctuations both in the global economy as well as in revenues from copper and other taxes.

Several internal and external institutions perform the management and accountability of both funds. They are managed by the Central Bank, which outsources the management of about 35% of the PRF to external fund managers. The committee releases its own annual reports separate from those of the Ministry of Finance. An external auditor's report is included in the report of the General Treasury. The Controller General performs an audit and reports to Congress and government. The Ministry of Finance also provides monthly, quarterly, and annual reports on the performance of the funds to Congress.

The Fiscal Responsibility Law did not establish a specific target for the structural balance but it did mandate each president to establish the bases of the fiscal policy during their administration and to inform Congress how its fiscal policy would affect the structural balance. The law outlined the savings rules for the fiscal surplus, which should be saved in the PRF (minimum of 0.2% of GDP, maximum of 0.5% of GDP), in the capitalization of the Central Bank (up to 0.5% of GDP for five years) and in the FEES (any surplus above 1% of GDP). Therefore, the law provided a reference target for the desired amount of savings to be accumulated as liquid assets.

The 2008/9 crisis and earthquake of 2010 provided examples of the limitations of an approach that requires ex-post compliance to the fiscal rule. Despite a drive to apply the rule rigidly ex-post, the two events were a significant external shock that ultimately required a revision of the fiscal rule target. The establishment of an independent Fiscal Council in April 2013 strengthened the fiscal rule.

The fiscal rule determines the overall envelope for the budget. The rule does not, however, have a direct impact on how those resources are spent, as mining revenues are not earmarked for any specific public expenditure (except military spending). Public expenditure allocations are decided by the budget law that the President sends to Congress for discussion and approval every year. In the Chilean context, the quality of the budgetary process, with permanent monitoring and efficient public expenditure programs, made unnecessary any special provisions for social expenditures from natural rents.

A clear benefit of the fiscal rule based on the structural budget has been its effect on the sustainability of social expenditures. This stability has contributed to the effectiveness of social programs (allowing for long-term planning of budget allocation) as well as to their credibility (by safeguarding their funding). Over the last decade, Chile has launched several new social assistance and development programs focused on extreme poverty, and social vulnerability and exclusion. Key programs include Chile Solidario (2002), aimed at overcoming extreme poverty; Chile Crece Contigo (2006), providing maternity and early childhood care, and education for poor families; and Pension Basica Solidaria (2008), providing non-contributory pensions to the old and disabled without social security. In 2011, government created the Ministry of Social Development to serve as a coordinating body of all social policies and to monitor their performance. To that end, government replaced Chile Solidario with a new cash transfer system, Ingreso Etico Familiar (2012), aiming to achieve better outcomes in employment and earnings for the poor. Moreover, the accumulation of revenues during the boom allowed the country to extend social protection and promote employment during the financial crisis, reducing the vulnerability of the poorest Chilean households.

The Chilean experience shows that fiscal policies must be supported by monetary and exchange rate policies to maintain macroeconomic stability and avoid the Dutch Disease. Although their influence was subtler than the fiscal policy, monetary and exchange rate policies were also important. Equally decisive was the existence of an active and informed civil society and media that demanded mechanisms for independent accountability.

## 2.3. THE RESOURCE CURSE

Instability in government revenues and spending can cause large fluctuations in real exchange rates, increase budget deficits and lead to excessive borrowing, making macroeconomic management extremely complex, and constraining growth. This in turn can lead to increased vulnerability and extreme dependence on the commodity sectors of the economy. Volatile fiscal revenues, often aggravated by procyclical government spending and over borrowing, can cause painful fiscal adjustments and lead to lower capital investment, reducing the efficiency of public spending and overall growth, a phenomenon often referred to as the “Resource Curse”.

The resource curse literature is largely based on the seminal work of Sachs and Warner (2001) who, using a cross section of international data, estimate a negative conditional relationship between growth and resource dependence. Following that work, a large literature has developed analyzing the existence and causes of the resource curse, the counter-intuitive finding that countries rich in natural resources tend to experience slower growth. The literature has highlighted the economic and political distortions frequently featured in mineral-dependent economies which inhibit growth, restrain economic diversification, and reproduce poverty and inequality<sup>31</sup>.

The two key elements of the resource curse are slower economic growth in resource rich countries compared to non-resource rich economies, and the awareness that a booming resource sector makes other sectors of the economy globally uncompetitive. Another feature is elite capture, as extractives-led growth does not call for political accountability, encourages poor governance and corruption, and without strong institutions, leads to the enrichment of minority elite groups and the eventual emergence of ‘predatory’ states. As the resources sector develops, the interest of those groups in capturing rents and maintaining their hold on power acts as a barrier to improving governance, retards political change and entrenches regimes, collectively known as ‘rentier elites’. Another component

of the resource curse is the tendency for a higher frequency of armed conflict in resource rich countries<sup>32</sup>. At the national level, lack of judicial independence, and increasing corruption and inequality are among the predictors of declining regime stability and an increased risk of civil unrest and conflict.

Extractive industries can have both concurrent and lagged impacts on a nation’s economic and social outcomes. Most studies have tended to focus on the lagged relationship between an initial and possibly ephemeral extractive boom and the rate of economic growth over subsequent decades. This line of research is largely supportive of the “resource curse,” whereby future economic growth and human development are impeded by earlier extractive activity. Regarding concurrent impacts, there is a strongly held belief that mineral and energy dependence “produce a type of economic growth that offers few direct benefits to the poor”, and “make pro-poor forms of growth more difficult”. Davis and Vasquez Cordano (2013) empirically analyzed whether economic growth in countries that have substantial mineral or energy extraction has a greater or lesser tendency to be pro-poor than in countries that have less extractive activity. They found no statistically significant positive or negative impact of the level of resource extraction on the pro-poor nature of economic growth. That is, the relationship between positive or negative growth and changes in the welfare of the poor are not conditional on the level of extractive activity in a country. They found, however, evidence that countries with growing extractive activity have a higher probability of a pro-poor outcome during a given positive or negative growth spell.

Beyond the fact that some countries have not suffered from it, the Resource Curse theory has been challenged in many fronts. A criticism is the time-frame on which many studies are based. The original contributions focus on the period 1970–90, too short for drawing conclusions on long-term impact. For example, breaking down time-series data into specific segments, Ross (1999) argues that the resource curse is a feature of a specific historical period, and of a specific set of institutional contexts within that

31. See Humphreys Bebbington and Bebbington (2010).

32. See Collier and Hoeffler (2004), and Ross (2012).

period. Maloney (2002) has challenged both the methodology and the conclusions of studies that identify the existence of the resource curse. He argues that there is little evidence based on long-term data that resource-abundant countries generally underperform. On the contrary, he claims that natural resources have played an integral role in the success of many successfully industrialized countries.

More recently, the cross-sectional design of their analysis has also come under increased scrutiny, and more sophisticated designs have called the existence of the resource curse into question, although finding convincing exogenous variation remains a challenge. For example, Mideksa (2012) argues that much of the empirical evidence is drawn from cross-country regression results and that, in many cases, controlling for an additional variable changes the sign and magnitude of the estimates. In addition, the lack of an appropriate comparison unit poses challenges for impact estimation. Since most cross-country studies on resource curse lack a relevant comparison or control unit that mimics how the economy would evolve in the absence of a natural capital endowment, it is almost impossible to estimate the impact of natural resources on national income.

On the other hand, Brunnschweiler and Bulte (2006) question whether a negative correlation between resource dependence and growth implies an underlying story of causation. More specifically, they argue that cross-sectional regressions suffer from problems of reverse causality. James (2014) proposes an alternative explanation. Because growth is a weighted average of growth in individual sectors, a declining international commodity price is disproportionately reflected in the growth rates of resource-dependent countries. While GDP growth is correlated with resource dependence (negatively so during periods of falling resource prices and positively during periods of rising resource prices) he finds little robust evidence that sector-specific growth is correlated with resource dependence. Additionally, he finds little evidence that resource dependence impedes growth in non-resource sectors. On the contrary, a booming resource sector appears to generate economic spillovers that positively affect growth in non-resource sectors in highly resource-dependent countries.

According to Gelb (2011), three main complications arise in the analysis of the impact of resource rents on long-term growth: (i) how to deal with the endogeneity of measures of resource abundance (reserves per head) and resource dependence (the resource-intensity of exports or fiscal revenues or GDP); (ii) how to measure outcomes (income levels, growth rates or broader development indicators); and (iii) how to allow for country heterogeneity. Studies using resource abundance measures tend to find positive associations between natural resources and growth, while studies using measures of resource dependence find a negative relationship with economic growth.

Brock Smith (2015) has argued that most of the empirical literature on the resource curse suffers from two significant flaws: as a commonly used measure, “resource wealth” is better understood as “resource dependence,” and the use of cross-sectional data. Using panel difference-in-differences, event study and synthetic control designs, he compares countries that have become resource-rich since 1950 with countries that have remained resource-poor (countries that were resource-rich already in 1950 are dropped from the analysis). He finds that newly resource-rich countries on average experience a large increase in GDP per capita levels that persists into the long-term, but no long-run growth effect. The resource discovery attracts additional investment, which further enhances growth during a transitional period until the capital stock per worker settles at a higher level and normal growth resumes. Likewise, Davis (2010) argues that the negative growth in these mineral economies may simply reflect a “resource drag”. The research testing for the resource curse fails to control for the fact that a static or declining minerals sector directly causes measured growth to slow. Booming nascent mineral and energy economies grow faster than they otherwise would, and busting mature mineral and energy economies grow slower than they otherwise would.

Other recent studies have challenged the empirical work on which arguments for the existence of the resource curse depend, primarily by using alternative measures of resource abundance rather than the resource share of GDP as in Sachs and Warner work. Lederman and Maloney (2007) challenged the Sachs and Warner findings on measurement and

econometric grounds and found natural resources abundance to have positive effects on growth. Alexeev and Conrad (2009) find a positive association between hydrocarbon deposits per capita in 1993 (or alternatively, the value of oil production per capita in 2000) and the level of GDP in 2000. These papers rely on the argument that natural resource endowments are exogenous, geographic variables. Nevertheless, van der Ploeg and Poelhekke (2010) point out that the available resource abundance measures are closely associated with current resource rents and thus endogenous to growth and income, and function more as a one-off estimate of natural capital and net adjusted saving, but not a suitable measure of actual subsoil wealth. Once resource abundance (proxied as a measure of natural resource wealth) rather than resource dependence (the average national income share of natural resource exports over a defined period) is used, the effect of natural resources on growth performance is positive and thus the resource curse disappears. A related argument is that what is truly being measured is known resource endowments (or an estimate based on known endowments), which depend on how thoroughly a given country has been prospected.

The shortcomings of the resource-curse theory derive mainly from the generalization that resource production harms the economy, glossing over the complexity of economic development processes in different countries under different circumstances. Sinnott, Nash and De La Torre (2010) conclude that on balance, much of the literature on the links between resource dependence and growth has been overly pessimistic and that there is no consistent empirical support in favor of the curse. And although there are pitfalls to avoid in the development of extractive industries, commodities do not appear to be inferior engines of growth compared to other sectors of the economy. The authors suggest three major points of intervention to break the potential negative impacts between commodity dependence and growth: diversifying production, improving management of government revenues, and enhancing the quality of institutions.

Why then have so many countries failed to diversify away from such a volatile and finite source of revenues? Avoiding the resource curse is a question of adapting the rate of extraction to the country's absorptive capacity to use the resource revenues prudently, and requires economic policies that stimulate the transformation of an economy over time by turning the extractive sectors into an engine of economic diversification, adding value to other sectors of the economy through the spin-off of activities they create, and by opportunities opened by non-dedicated infrastructure.

According to Stevens et al (2015), there is a strong propensity among countries that discover resources to develop them as quickly as possible. Announcements of commercial discovery inevitably raise expectations among the population and put governments immediately under pressure to generate revenue. At the same time, governments see the inflow of revenue as a means of solving various macroeconomic problems and facilitating their re-election. Supporting this, is the long-held view among extractive companies that the sooner and faster the resource is produced, the better the project economics will be<sup>33</sup>. Key in this context is the role of shareholders and financial markets, not only in setting the cost of capital but in demanding visible near-term returns.

The authors suggest that a good practice to manage the risk of the resource curse is to slow the sector's rate of development, allowing time for institutional capacity and economic linkages to be built. The adequate pace of production depends on the state of the economy and the strength of the private sector. The greater the disparity between the project and the capabilities of the local economy, the slower the pace of project development should be. However, if extractives-led growth is to be sustained, the resource base must be sufficiently robust to allow extraction to continue long enough for new economic sectors to emerge and generate revenues that can support government spending.

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33. The logic behind that view derives from the economics of discounted cash flow associated with any project: the assumption is that, if gross inflation is not expected, future revenue will be worth less than present revenue. Thus, other things being equal, early production will increase the net present value of the project and hence its economic attractiveness. In addition, given the large technical economies of scale dictated by the infrastructure needs of the industry, the more that is produced, the lower the cost of production.



Credit: AdobeStock

Indeed, most governments can in practice influence the pace of extraction through the regulatory process. As the owner of the resources, governments can decide how many exploration licenses are granted and, in most cases, approve development plans on an individual basis. Once a country has discovered a potentially significant subsoil resource it is good practice to initiate a national dialogue among stakeholders to discuss how quickly the resource should be exploited, as Norway did when the North Sea oil was first discovered. A national dialogue can help manage the expectations and help forge a common view on how to develop the resources<sup>34</sup>.

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34. See Stevens et al (2015).

A photograph of two mining workers in safety gear (white hard hats and orange high-visibility vests) standing in a dark, rocky environment. In the background, there is a large piece of yellow and blue mining machinery. The scene is dimly lit, with some light reflecting off the workers' gear and the machinery.

# CHAPTER 3» DESIGNING AND IMPLEMENTING MINING SECTOR POLICIES

## CHAPTER 3» DESIGNING AND IMPLEMENTING MINING SECTOR POLICIES

### PROMOTING SUSTAINABLE MINING DEVELOPMENT REQUIRES THE ABILITY TO FORMULATE, IMPLEMENT AND EVALUATE PUBLIC MINING POLICIES THAT INVOLVE AT LEAST THREE KEY ELEMENTS:

» A clear and stable **legal and regulatory framework** granting legal security for the development of the sector, including transparent and non-discretionary procedures for the allocation of mineral rights, planned and agreed with environmental and subnational authorities.

» **Strong institutions** providing agility in response times not only in mining but also in other related areas such as environmental management, judiciary, financial services, etc.

» **Progressive fiscal terms** that attract investments into the sector, generate a sustainable flow of tax revenues over the long term, and are effective under low as well high commodity prices, contributing to moderate the effects of extractive industries' "boom and bust" cycles.

The formulation of sector mining policies was traditionally entrusted in a ministerial authority in charge of mining but increasingly is the responsibility of several interrelated stakeholders. It is good practice to enshrine the formulation of mining policies on consultations with a broad base of stakeholders leading to the construction of a shared vision providing direction and clarity on key sector issues. The need to attract investment into the sector must be reconciled with other national development priorities, with the orderly planning of subnational territories, and consider the benefits accruing to local communities.

One of the biggest challenges is enhancing inter-agency coordination. Roles and responsibilities of the different institutions and agencies need to be

clearly defined and enforced both at the central and subnational levels, to bridge gaps and avoid overlapping or conflicting mandates in policy making, implementation and oversight. Several different central government entities engage with sector management, namely: (i) the ministry in charge of mining; (ii) the ministry responsible for environment; (iii) the ministry responsible for Indigenous People, local communities and social affairs; (iv) the ministry of finance and the taxation authority; (v) the ministry responsible for economic planning; (vi) the ministry of transport and infrastructure; (vii) the ministry responsible for agriculture; (viii) the ministry in charge of small business development; (ix) the ministry of labor; (x) the ministry of health; and (xi) the ministry of education. To these branches of the Executive we must add specialized regulatory agencies, subnational governments, Parliament, the Judiciary, Indigenous Peoples and affected communities.

Revising a mining policy or updating the mining law has become lately an increasingly difficult task for LAC governments as the dialogue with industry and the consultation with Indigenous People and affected communities must follow adequate procedures and this can take a long time. Laws prepared without consensual mining policies (let alone development strategies) stalled because of increasing resistance by environmental authorities to mining development, opposition by local communities and civil society organizations to grant access to land to legal holders of mining permits, and a generalized feeling that the sector has failed to contribute to the economic development of the country or the affected communities.

## 3.1. INSTITUTIONAL AND LEGAL FRAMEWORKS

The recurrent outcome in an increasing number of countries is uncertainty and sector paralysis: revisions of the mining code have been pending approval for years; mining registers have closed, and no new permits have been issued (except perhaps through the "back door"); restrictive environmental legislation excluded huge parcels of prospective land from mining exploration; and social conflicts blocked mining projects and operations.

The principles of modern mining legal and institutional frameworks were developed in Latin America in the 1990s. The key elements of the Latin America approach include: (i) easy access to exploration areas based on clear and transparent “first-come, first-served” processes; (ii) an independent mining cadaster and title registry open to the public; (iii) security of tenure and free transferability of mining titles; (iv) simple financial requirements for the maintenance of mining rights, and (v) freedom to operate and market the output on commercial terms.

**Chile** pioneered this movement and the country’s structural reforms are often referred to as the Chilean Model. Fuentes (2009) has identified five key elements of this model: (i) the privatization of natural resources has allowed for huge additional investments in the sector and has enhanced accountability, albeit at the cost of wealth transfers to private investors; (ii) the transparency of public finance has helped to monitor copper revenues; (iii) the fiscal rule and the stabilization fund have helped define the way revenues from copper are spent or saved; (iv) the stabilization fund, in addition to an outward oriented economy, has boosted export diversification; and (v) strong institutions have played a major role in achieving results.

According to the author, the origins of the Chilean Model date back to the military coup of 1973, and the decision of the new government to attract foreign direct investment by building new rules for it and institutionalizing them in such a way that it would be difficult to modify them. In 1974, Decree Law 600 (DL 600) was established to protect and promote foreign investment, assuring investors the right to repatriate their capital and net profits. It also established the non-discrimination principle between foreign and domestic investors but opened the possibility for foreign companies to be subject to an effective fixed tax rate of 42% on taxable income, for a ten-year period. This benefit was extendable to twenty years for investments above US\$ 50 million.

Alternatively, foreign companies could waive (only once) this right and be submitted to the general tax law applied to national investors, which can be subject to changes over time. Accelerated depreciation

and cumulative losses could be deducted from profits to calculate taxable income.

The mining reform was shaped under two laws, the Organic Constitutional Law on Mining Concessions of 1982, and the Mining Code of 1983. These laws were specific to the mining sector and - as a response to the nationalization in 1971 of the American copper companies operating in Chile - provided constitutional protection of property rights over mining concessions<sup>35</sup>. These are real rights that cannot be expropriated, unless by a law authorizing the expropriation and providing for the prompt and full compensation according to legal criteria based on the net present value of the mining reserves. Moreover, by establishing that the rights over concessions are of indefinite duration and freely transferable and mortgageable, these laws created a market of mining rights. There are no working or investment requirements to maintain mineral rights, except reliance on the payment of a single annual fee. Finally, the law favored the systematic reduction of spaces for public discretion and potential arbitrariness, introducing impersonal rules whenever possible. Mineral rights are granted by resolution of the courts, so there is no room for neither political nor administrative discretion.

**Peru** followed **Chile** in this reform process that fundamentally changed the role of the state in mining, from an operator to an investment promoter and regulator. The Peruvian administration that took office in 1990 initiated a series of structural reforms that opened the country to foreign investment, mainly through the privatization of state-owned enterprises. By enacting the Mining Investment Promotion Law (MIPL) in 1991, as an amendment to the General Mining Law of 1981, the government declared the promotion of investments in the sector of national interest. These changes, consolidated in the Single Revised Text of the General Mining Law of 1992, redefined the types of mineral rights and the functions and management of a modern cadaster. The reform also simplified the tax regime, eliminating any discrimination between national and foreign capital, offering tributary stability contracts, and removing export taxes and restrictive foreign exchange rate policies, among other changes.

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35. These passage is based on a description of the mining reforms introduced in Argentina, Chile, and Peru in the early 1990s by Bastida, Irarrázabal and Labó (2005).

The reform process expanded to other countries like **Argentina** where the revitalization of mining took place through the approval of a new legal and fiscal framework, as part of the economic liberalization promoted during the 1990s. One of the core pieces of this framework was the 1993 Mining Investment Law which introduced fiscal stability of the tax regime for thirty years from the date of submission of the feasibility study. The 1993 Federal Mining Covenant had a key role in defining consensus policies between federal and provincial authorities and was followed by two pieces of legislation which introduced significant amendments to the old 1887 Mining Code. Based on the ownership of the provinces over their mineral resources, the legislation improved the coordination of procedural aspects of the mining law by means of inter-jurisdictional agreements aimed at implementing a unified procedural code for mining in provincial jurisdictions.

The development of the legal and regulatory framework for the management of mineral resources is often a long process, requiring continuous reviews and improvements. The biggest challenge is to build a legitimate social and political consensus to design and implement it. The basic legislation must establish the framework for reconciling the divergent interests of key stakeholder groups, including all levels of government, mining investors, owners of surface land rights, parties that can be affected by the social and environmental impact of extractive industries, and civil society.

A successful mining legislation means different things for different stakeholders: central governments have focused in attracting private investment and, more recently, increasing short-term tax revenues, despite lower commodity prices. Industry is putting a premium on security of tenure and stability of legislation, while pressuring governments to adjust fiscal regimes to the price downturn. And local communities no longer are passive spectators, having to endure the social costs of mine development without receiving a commensurate part of the potential benefits.

#### Good practices in the preparation of mining legislation include:

» Alignment with the Constitution and the overall Development Strategy, as stated in the country's

Mining Policy;

» Consistency with other laws that affect sector activities (tax code, environment, land, water, forestry laws, etc.);

» Consistency with the country's international obligations. These range from commitments arising from the signing of international treaties and conventions, the obligations on trade from membership of the World Trade Organization and various trade agreements, investment treaties, and double taxation treaties to soft law principles such as those concerning transparency (for example, the EITI- Extractive Industries Transparency Initiative);

» Clear definition of the property of mineral resources and the institutional mandates and responsibilities for granting them, including subnational authorities (Central Government, States/Provinces, and Municipalities);

» Equal treatment for everyone under the law, being both non-discretionary, with criteria and procedures clearly defined in the legislation, and nondiscriminatory, providing the same treatment for all companies, either public, or private, foreign or domestic owned;

» An adequate balance between what is contained in the Law (providing greater security) and what will be treated in the regulations (which are more flexible and easier to change);

» Description of the restrictions to private mining activities by state actors (i.e. strategic minerals reserved for state-owned enterprises, reserved areas for exclusive development by the State, and land reserved for exploration by the National Geologic Survey);

» Definition of areas where mining activities will be restricted by environmental or social considerations (i.e. protected areas, Economic and ecological Zones) or will not be allowed ("no go zones");

» Clear rules and procedures for the scope and implementation of the key instruments for environmental licensing and compliance: Environmental and Social Impact Assessments, Environmental

Management Plans, and provisions for mine closure. The definition of environmental liabilities associated with the transfer of mining permits should also be included, as well as measures to improve safety of tailings dams and handling of hazardous materials;

- » No restrictions to the commercialization of mineral products;
- » Measures facilitating financing of mining projects (i.e. transferability<sup>36</sup>, leasing and mortgage of mineral properties);
- » Appropriate dispute resolution mechanisms;
- » Compliance with the Law on Access to Information;
- » Measures enhancing transparency and accountability, like public disclosure of all information that is not commercially sensitive; registers' information; revenue payments (EITI); contract disclosure, among others;
- » Corruption control measures, such as disclosure of situations of potential conflict of interest of public civil servants, and transparent and verifiable information about the companies, including beneficial ownership, financial track record, criminal history of key shareholders and managers.

Clarity and transparency of licensing procedures are paramount to the ordered development of mineral resources. By defining the terms and conditions of the allocation of mineral resources and government's participation in the industry, they set the attractiveness of the country to investors while allowing to establish processes to select the quality investors, fending-off speculators and "fly-by-night" operators. They also facilitate the achievement of other policy objectives, such as job creation, skills enhancement, social and environmental obligations, local economic development, etc. Mistakes done during the allocation process are difficult to correct in the future.

### Most-often used licensing procedures can be grouped in three broad categories:

» **Open bid**, consisting of open tendering with clearly defined procedures and sealed bids. A sealed bid license round with fixed terms is used in many countries. Licenses are awarded based upon one or several bid parameters clearly and transparently defined beforehand, such as investment program, cash payments and bonuses, royalty and even other tax rates, job creation, among others. Where awards are based on more than one variable, governments should disclose the relative weights they have assigned to each variable for selection purposes. Public disclosure of competitors and of the winning bid is a good practice;

» **Negotiated deals**, whereby government and company negotiate the terms of the concession or contract without open competition and often without clear definition of the rules of the game. Because it is generally associated with considerable discretion on the part of government, it may lead to significant deviations from the standard legislation, and has a bigger risk of corruption;

» **First come, first served** (open-door policy with priority in time). This system is easy to design and implement: the first investor to apply for rights in an area has a priority to be granted rights to explore, provided it satisfies certain administrative requirements. Fundamental principles include: (i) the eligibility criteria, and the procedures and deadlines for allocation are clearly defined in the legislation; (ii) licenses are assigned in the order in which the applications were received; and (iii) all applications for mineral titles that meet the eligibility criteria are automatically accepted, with no need for negotiation<sup>37</sup>.

The first come, first served methodology is the most frequently used and is more appropriate for areas that are largely unexplored. However, in areas where geological data is available and where there are strong indications of interest from more than one potential applicant, it is preferable to grant licenses

36. Government consent should be conditional on the new license holder meeting certain financial and technical capacity criteria, the eventual payment of a tax on any capital gain made from the transfer, and on the clear definition of who is going to be responsible for the pending environmental liabilities.

37. For more details on the first come, first served methodology see Ortega Girones et al. (2009).

on a competitive bidding basis. Because of that, it is very important to invest in the generation of good quality geological and territorial data and make it available to interested parties, so that public and private entities can plan their activities accordingly and citizens can follow up on the development of mining activities. The first function is generally the responsibility of the national geological service, while there are a multitude of agencies and data bases responsible for collecting information and planning of territorial development. An important gap in many countries is the existence of cross-information systems compiling, collating and treating sector and territorial data.

It is good practice for a mining legislation to prescribe clear, transparent and easily enforceable rules about (reasonable) permit areas and duration periods for exploration and mining, including: (i) types of titles (such as prospecting, exploration, mining, retention, artisanal and small-scale mining, among others); (ii) types of minerals covered (i.e. exclusivity for all minerals or overlapping claims for different minerals); (iii) area format, maximum surface and maximum periods of exploitation authorized by title; (iv) reporting and other obligations; (v) institutional coordination with other agencies, in particular with the Ministry of Environment, to facilitate the approval process (water, environment, land, biodiversity, forests, etc.); and (vi) consultation with Indigenous Peoples and affected communities<sup>38</sup>. An essential aspect of the legislation is to avoid overlapping applications and rights previously requested or granted over the requested area, protecting the rights of the titleholders through the granting of exclusive rights to carry out the activities defined in the license.

Transparency and predictability in the procedures for application, granting, and enforcement of licenses enhance accountability and reduce the scope for corruption. Although access to information is a fundamental right of all citizens, transparency cannot be assimilated simply to disclosure of information. It must also include clarity and nondiscretionary principles in the definition and enforcement of legisla-

tion, as well as accountability mechanisms to ensure that legislation is being applied to improve the general welfare of the population.

There are different models throughout the Region for the allocation of mining rights. They can be carried out by a centralized organ of the public administration, by subnational authorities or, in the case of **Chile**, by the Judicial Branch<sup>39</sup>. Some federal systems have devolved substantial operational control to subnational governments, like **Argentina**, for example, where provincial authorities award licenses and impose taxes on mining activities. In all events, the legal and regulatory framework should define clear mandates and stable and predictable rules for the institution(s) responsible for granting mining rights. It is good practice to create an independent institution (the “Mining Cadaster”) that maintains an updated registry of current and expired applications and titles, open to public consultation.

The approval of projects and the oversight of the authorized activities calls for the creation of public bodies specialized in the evaluation and monitoring of environmental, social and economic impacts, normally spread among a multitude of decentralized agencies. It is good practice to have different public agencies coordinated and aligned so that procedures flow between the different entities in reasonable times. The creation of a single window (“one-stop shop”) for environmental licensing has been adopted in countries like **Peru** to achieve this goal.

Attention should be given to the margin of discretion of the competent authority to grant licenses. On one end are those regimes where the margin of discretion is very limited because licensing and all other major legal and fiscal obligations are governed by generally applicable law requirements, and there is no scope for any type of evaluation. In limiting government arbitrariness in granting or cancelling rights, these regimes make corruption practices more difficult and offer companies greater security of tenure. There is also less of a burden on government administration because generally applicable

38. See De Sa, Paulo (2017).

39. The case of Chile is exceptional. When being granted a mining license, whose property is constitutionally protected, the titleholder also indirectly acquires ownership over the mineral resources found in the area covered by the title, even if they have not been extracted. See Gorget (2016)

laws are significantly less labor intensive to implement and monitor than a series of different individual agreements with varying terms<sup>40</sup>. On the other hand, regimes in which the granting of the mining rights is linked to the negotiation of a contract require seasoned institutions capable of bridging information asymmetries during negotiations and monitoring compliance with the agreed obligations. On the flipside, they can be more selective on the quality of the investors.

Easy access to mineral resources is very important but it is good practice for the legislation to contain measures to avoid speculation, including: (i) criteria to select the quality of investors (e.g. technical and financial capacity, and judicial track record of the applicants); (ii) limitation of the number of licenses and maximum areas per owner and affiliated companies; (iii) minimum work programs of expenditures per square kilometer; (iv) reporting requirements; (v) obligation to start work within a specified period; (v) relinquishment of areas; and (vi) surface rental fees progressive in time. Legislation should have clear (minimal) criteria for the cancellation (forfeiture) of mining titles, dispute resolution mechanisms, and guarantees against expropriation.

Many jurisdictions in LAC, such as **Argentina** and **Chile**, distinguish between exploration and exploitation licenses<sup>41</sup>. In these cases, the legislation grants the exclusive right to the owner of the exploration permit to request and obtain the respective mining right. In Chile, unlike Argentina, it is not needed to prove the existence of a mineral deposit or carry out exploration activities to gain access to the mining license. Security of tenure in the critical transition from exploration to mining rights is indeed essential to protect investors' rights. Rationale for this is anchored in the fact that mining exploration is a very risky business with a low rate of success. The potential of selected areas is difficult to evaluate without good geologic data and, because of that, the private sector has traditionally had a primordial role in the discovery of new mineral resources.

In **Colombia**, **Mexico** and **Peru**, however, both exploration and mining rights are included in a single title. In Colombia, exploration and exploitation activities are part of the same concession. They derive from the implementation of a work program that the operator submits with its application for a concession. Once the concession is granted, the work program is incorporated into the title and becomes part of the obligations to which the concessionaire is subject. Failure to do so may lead to the cancellation of the concession. In addition, the title only gives the right to explore and exploit the mineral or minerals expressly mentioned in the concession.

In **Peru**, there is a requirement to pay a sum of money per hectare, and an obligation to begin the work within the eleventh year from the granting of the title. If this does not occur, the Peruvian Mining Law imposes a penalty equal to 10% of the minimum annual production fee required per year and per hectare. **Mexico's** legislation distinguishes between "assignments" and "mining concessions". The first correspond to the legal title issued by the Ministry of Economy in favor of the Mexican Geological Survey to carry out exploration to identify and quantify mineral resources in the national territory. The second corresponds to the title that is given to individuals to explore and exploit. In the case of "assignments" mining reserve areas, the Mining Law allows mining concessions to be granted by tender before land is declared free<sup>42</sup>.

Regulations dealing with health, safety, and social and environmental issues have become critically important in the management of the mining sector. The current trend is to move away from detailed requirements and to develop goal-setting regulations, giving flexibility in the methods or equipment that companies may use to meet their obligations. This approach is also known as the internal control principle<sup>43</sup>. Rather than putting all the burden on the regulator to decide *ex ante* which standards and practices are appropriate, increased responsibility is put on the company to convince the regulator that its plans are reasonable and responsible, avoiding

40. For a comparison of the advantages and disadvantages of granting permits and concessions through standard legislated processes or through negotiated contracts see BMZ (2016).

41. For a description of countries in the Region that distinguish between exploration and exploitation licenses and those that don't see Gorget (2016).

42. See Gorget (2016).

43. See Cameron and Stanley (2017).

the problems that arise when prescriptive regulations become outdated because of rapidly changing and increasingly complex operating conditions.

Finally, conflicts and overlaps between large mines and artisanal and small-scale mining are a recurring problem in LAC<sup>44</sup>. Artisanal and small-scale miners are a permanent challenge to governments that try to manage the sector through top-down policymaking and regulation, for whom the informal sector<sup>45</sup> is a hindrance because it is “unknown,” and “not regulated”. Artisanal mining is often classified as “illegal”, because it is sometimes linked to corruption, environmental degradation, and the reduction of potential government revenues. When perceived as a form of tax avoidance, rather than a legitimate subsistence strategy of the economically oppressed, artisanal mining is criminalized, and prosecuted. Faced with situations of conflict, governments often respond with formalization processes that frequently force artisanal miners to comply with ongoing commercial, social and environmental norms. In this context, formalization is seldom successful and entails risks such as barriers to poor actors, elite capture, and negative impacts on women or marginalized groups.

Legislated rights to trade, access to resources, technology and financing are often touted as ways by which poverty, environmental degradation, human rights abuses, and conflict can be reduced, while economic development can be enhanced<sup>46</sup>. It is good practice to include in the legislation specific treatment to artisanal and small-scale mining including: (i) guarantee of property rights for artisanal miners; (ii) specific licensing procedures; (iii) specific fiscal regime; (iv) measures facilitating the formalization of artisanal miners and combating the proliferation

of illicit financial flows; and (v) special provisions for the commercialization of products and measures facilitating access to finance.

## 3.2. CASE STUDY: CHALLENGES IN THE IMPLEMENTATION OF COLOMBIA'S MINING SECTOR POLICY

Extractive industries have a big economic impact on Colombia<sup>47</sup>. Over the last fifteen years Government has promoted reforms in the sector's legal and institutional frameworks and revenue sharing arrangements, to increase investment and generate income to boost economic development. Results, however, were below expectations. While production of oil, gas and mining have improved livelihoods for some groups or regions, it has also been the source of social conflict and environmental degradation in parts of the country.

President Uribe's administrations (2002-2010) took the first steps to effectively turn Colombia into a mineral and oil producing country. In 2006, a Mining Development Plan was approved, with the explicit objectives of strengthening the sector's contribution to the economy and turning it into a leader in the Region.

The first administration of President Santos (2010-2014), seeking to capitalize on the minerals boom, selected extractive industries as one of the pillars of economic growth and development in the National Development Plan 2010-2014. Their contribution to the economy would cover four basic objectives:

44. See De Sa, Paulo, Rachel Perks, and Daniele La Porta (2013).

45. The term “informal sector” appeared in the 1970s to characterize unregistered labor and was popularized by the International Labor Organization to refer to small-scale low-technology, low-productivity, and low-income activities important to local livelihoods. Informal economies are perceived to arise and persist in an environment of excessively burdensome taxes and regulations imposed by governments that either lack the capacity to enforce compliance or willingly maintain a layer of informality to serve their vested interests. See Putzel et al. (2015).

46. An analysis of the mining legislation in 21 countries of Latin America concluded that only nine explicitly recognize small-scale mining in their mining legislation: Bolivia (Mining Code, Article 21), Brazil (Código de Mineração, Article 70), Chile (Mining Code, Article 142), Cuba (Mine Law, Article 46), Ecuador (Mining Law, Article 138), Mexico (Regulation of the Mining Law, Article 9), Nicaragua (Special Law on Exploration and Exploitation of Mines, Article 40), Paraguay (Mining Law No. 3180, Article 16), Peru (General Mining Law, Article 91) and Venezuela (Law of Mines, Article 64). See GÜIZA, Leonardo (2013).

47. The extractives sector has been a major contributor to Colombia's economic growth. In 2013, mining and petroleum represented 7.7% of GDP, with exports reaching US\$ 38.2 billion, equivalent to almost 70% of the year's total exports. According to the Central Bank, mining and hydrocarbons represented 62% of total foreign direct investment flows between 2005 and 2014 of US\$ 65.3 billion. During the same period, the collection of royalties totaled almost COP \$ 61 billion, which represented 28% of the Colombian GDP, with COP\$ 10 billion alone in 2014. See NRGÍ and Foro Nacional por Colombia (2016).

(i) to reduce the fiscal deficit and generate exports to support the balance of payments; (ii) generate income to finance the Plan's objectives in terms of social development, employment, infrastructure and territorial equity; (iii) create linkages with other sectors, especially industry and agriculture, spilling the impacts of extractive industries growth into the rest of the economy; and (iv) create high productivity and world scale clusters of value added around mining. With additional investments and high commodity prices, extractive industries grew in importance, but the ambitious goal of turning the sector into a driver of growth did not materialize, as many new investments faced social resistance from local populations. Moreover, the Constitutional Court defended the enforcement of constitutional environmental provisions and the Indigenous and Afro-Colombian rights to territory and consultation, creating barriers to rapid investments in the sector<sup>48</sup>.

Law 1382 of 2010 contained major reforms to the mining code of 2001. The new law proposed the introduction of objective criteria for the selection of investors, changes to the granting of mining concessions and the extension of contracts, and mechanisms to facilitate the formalization of artisanal mining. However, the Constitutional Court declared Law 1382 to be non-implementable, because it had been approved without a formal process of prior consultation with indigenous peoples. The Court granted the Government two years to write a new law and implement proper consultation, allowing in the meantime the application of some articles related to environmental aspects. Still, Government failed to meet the deadline and the 2001 mining code of was re-entered into force in May 2013. Government passed instead specific legislation, such as the protection of moors and wetlands (Law 1450 of 2011); mining formalization and legalization (Decree 933 of 2013); the competences of the mining and environmental authorities in the definition of restricted and excluded zones (Decree 934 of 2013), and the requirements and processes for the application of mining titles (Decree 935 of 2013)<sup>49</sup>.

The lack of a shared vision and coordination between the legal and institutional arrangements governing public sector entities—especially the relation between the mining and the environmental authorities—has become a major roadblock to the development of the mining sector in Colombia. In addition, the granting of licenses by central authorities without mechanisms for the participation of subnational governments and proper consultation to Indigenous Peoples and ethnic minorities is being questioned in the context of their constitutional mandates to manage territories. For example, in its judgment C-123-14 of 2014, the Constitutional Court of Colombia ruled that the constitutionality of Article 37 of the Mining Code<sup>50</sup>—denying the competence of subnational authorities to temporarily or permanently ban mining from parts of their territory—is subject to guaranteeing these governments a reasonable level of participation in the decision-making process regarding the authorization of mining activities. Thus, when granting mining licenses, central government should agree with municipal authorities measures for the protection of watersheds, and the economic, social, and cultural development of communities. In another judgment (T-445/16), the Court acknowledged the powers of regional and municipal authorities to exclude areas of their territory from mining<sup>51</sup>.

These judgments broke the verticality of the central-subnational relations in the management of mineral resources and—by making top-down sector legislation constitutionally incompatible with the division of powers granted by decentralization—disrupted the dynamics of sector decisions. The unconstitutionality of Law 1382, the lack of clear rules in the definition of environmental restrictions and judicial rulings such as C-123 of 2014 and T-445/16 of 2016 have introduced major changes in the rules of the game for the mining sector. In addition, the industry suffers from high levels of illegality and informality and poor environmental and social dialogue, as the sector's impacts are not properly identified, prevented, mitigated or compensated. For example, sometimes titles are given in excluded areas and in areas of special ecological importance. These problems hinder the arrival of suitable operators, stim-

48. See NRG and Foro Nacional por Colombia (2016).

49. See NRG (2015).

50. Article 37 of the Mining Law states that no regional, sectional or local authority may establish areas of territory that are permanently or temporarily excluded from mining.

51. See Bastida, Ana Elizabeth and Luis Bustos (2017).

ulate informality and crime, encourage predatory illegal extraction and lead to social conflict in the producing areas and to delays in both mining and environmental procedures. All the above leads to a bad perception of the industry<sup>52</sup>.

The Santos Administration also made a substantial reform to the system by which royalties generated by the extractives sector are allocated to funds and territories and managed by different institutional mechanisms (known as “Sistema General de Regalías” or SGR)<sup>53</sup>. To tackle the limited impact of the previous system and internal conflict dynamics in resource regions<sup>54</sup>, on December 26, 2011, Decree 4923 centralized the management of royalties. By modifying articles 360 and 361 of the Constitution, the Decree limited the power of local authorities in resource revenue administration. The new system allocates revenues to producing and non-producing territories, and to several funds designed to invest in science technology, save for periods of low commodity prices, and support the regional public pensions system. The new system also established the, subnational multi-level and multi-stakeholder bodies that decide on the projects on which the revenues should be spent (the Órganos Colegiados de Administración y Decisión, or OCADs).

Government also implemented an institutional reform, improving the sector’s oversight, streamlining procedures, and collecting and interpreting mining and environmental information, while suspending the granting of new mining titles until pending applications were processed, since the process was plagued by irregularities.

Notwithstanding, the new institutional framework has not been consolidated and a coherent mining policy is still missing. The industry fell into a

period of low performance and increased informal activities, associated with environmental deterioration and social conflicts<sup>55</sup>. Most mining is done without regularized mining titles, compliance with current regulations and the involvement of public authorities, something that has been used by groups outside the law, plunging large areas of the country into conflict over the control of natural resources. In a context of weak governance, corruption and great inequity, Government and companies failed to collaborate in the implementation of regional and local development processes leading to a sustainable and equitable management of the territory. This facilitated the emergence of illegal networks of marketing and distribution of inputs, minerals and resources, generating opportunities for actors outside the department, illegal armed groups as well as public entities that have been co-opted by the flow of illicit revenues<sup>56</sup>.

Consequently, the image of mining in public opinion is negative and conflicts with communities rampant. Mining companies have been forced to fill the void to obtain legitimacy and social support for their operations, contributing with amounts that are sometimes higher than normal public expenses. Under these conditions, a part of the immediate needs of the population are often supplied by private actors, weakening the visibility of local governments, without generating development or institutional capacity in the municipalities<sup>57</sup>.

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52. For a comprehensive diagnostic of the challenges confronting mining in Colombia see UPME and Universidad de los Andes (2014).

53. See DNP- Departamento Nacional de Planeación (2013).

54. And under the argument that the departments and municipalities were corrupt - an argument that was verified by the oversight organisms - and did not have the capacities to handle these resources. See NRG (2015).

55. See UPME and Facultad de Minas, Universidad Nacional de Colombia-Sede Medellín (2014).

56. According to Alexandra Guaqueta, Public Affairs Advisor at Cerrejón, illegal guerrilla groups, pressured local administrations through coercion and corruption to inflate social investment and infrastructure contracts coming from mining revenues. They developed these practices in exchange for a safe environment to operate and for potential electoral backing for politicians who sympathized with them. See EITI (2009).

57. Isabel Buitrago Franco and Saleem H. Ali (2016) found that the implementation of social responsibility agendas in poorly governed regions rarely delivers sustainable legacies for communities, as the lack of regional connectivity in governance prevents companies from playing a stronger role in forging sustainable livelihoods. The authors identified two key factors as hindering companies from further engaging in social sustainability in Colombia: civil armed conflict driven by informal mining groups and poor mining revenue management at the local level.

## BOX » IMPACTS OF THE 2015 COLLAPSE IN PRICES ON THE GLOBAL MINING INDUSTRY

According to PriceWaterhouseCooper the world's 40 largest mining companies recorded a combined loss of US\$ 105 billion in 2015, for the first time in a decade. Plunging revenues undermined profitability among the largest firms, but a surge in impairment charges as firms wrote down the value of their assets also played a role. The income tax expense of these companies fell 81.8%, from US\$ 22 billion in 2014 to US\$ 4 billion in 2015. The collapse in prices severely damaged the resource industry, as producers lost US\$ 2 trillion of cumulative shareholder value. For the oil and gas sector, the lifting cost per barrel increased by more than 300% between 2004 and 2014 (equivalent to an annual average growth of 11%), from about US\$ 8 per barrel of oil equivalent to more than US\$ 28. The return on invested capital for oil companies fell by about 50% between 2005 and 2011, and, by the end of 2015, it had deteriorated by 90% or in some cases more. See PWC (2016). The productivity of mining declined by 6% per year between 2004 and 2009, before leveling off and averaging 4% from 2004 and 2014 and remaining at 30-year lows. The rapid decline in productivity was a reversal after many years of improvements across the industry. It was due to a combination of factors, including harder-to-access reserves, higher equipment and skilled labor costs, and rising upstream capital costs. At the same time, capital discipline and operational excellence became a secondary focus. Markets have punished resource producers, with North American and European producers losing 30 to 75% of their market capitalization from peaks reached between 2010 and 2013. Resource producers' return on invested capital deteriorated by an additional 90% for diversified miners and integrated oil and gas companies and by about 300% for exploration and production companies. In response, the industry has made large cuts to capital spending and to workforces, and increased cost-cutting efforts. See McKinsey Global Institute (2017).

### 3.3. FISCAL REGIME

In the last ten years, most Latin American countries showed a significant increase in the collection of tax revenues as a percentage of GDP, to a large extent because of an increased contribution from extractive industries. Among the countries that showed a greater dependence on resources from extractive industries are Bolivia (29.9%), Ecuador (34.5%) and Mexico (32.5%); In a second group are Chile (17.3%), Colombia (16.2%), Argentina (13.6%) and Peru (9.3%)<sup>58</sup>. Still, tax revenues from extractive industries in LAC fell sharply in 2015 and in 2016, having recovered in 2017 as a result of an increase in commodities prices.

#### A) DESIGNING PROGRESSIVE FISCAL REGIMES

Economic returns on extractive industries come partly in the form of remuneration to capital and la-

bor, and partly in the form of rents, defined as the excess of revenues over all costs of production, including those of discovery and development, as well as the normal return to capital<sup>59</sup>.

The main objective of the tax regime is the optimization of the fiscal take over the life of each project, largely through the maximization of the capture of these rents, while maintaining the ability to attract investments that generate a continuous flow of revenues over the long term. At the same time, the tax regime should also contribute to moderate the effects of the "boom and bust" cycles that are common in extractive industries by designing progressive fiscal terms that are effective under low as well as high commodity prices. Other policy objectives include ensuring that revenue arrives during the early stages of the project and is dependable, minimizing opportunities for tax evasion, and having an administrative simplicity that is in line with the capacity of the tax authority<sup>60</sup>. By design, the tax regime should

58. See Red de Justicia Fiscal de América Latina y el Caribe (2015).

59. This definition of rents comes from IMF (2012).

60. See IMF (2010), van Meurs (2016), and Cameron and Stanley (2017).

stimulate transparency over the revenue generation mechanisms and how they are spent in accordance with national development objectives and to the benefit of local communities.

Because of the massive capital investments required for minerals development and the long gestation periods of projects, governments need to calibrate carefully the overall tax burden imposed on the extraction of these deposits. In simple terms, if the enabling environment is not conducive and taxes are too high, the country will get little investment, and will not be able to develop its mineral endowment to its full potential. Conversely, if taxes are perceived as being too low, allowing private companies to capture windfall gains, tax revenues may be very slow to emerge. This will generate frustration among the population and could lead to nationalization of assets in periods of high commodity prices.

Mining tax revenues were relatively modest in the 20 years that preceded the increase in commodity prices that started around 2004. During the boom, governments sought not only to increase the amount of tax revenues but also to get a larger share of the profits generated by the industry, through an increase of the fiscal take. The most common way to adjust the mineral sector taxation system was through the manipulation of royalties, because such schemes do not affect other sectors of the economy. Attempts to unilaterally increase the tax burden in periods of high prices faced steep resistance from mining investors and in some cases resulted in sharp reductions in exploration and investment in the sector.

Mining is a global industry. While tax regimes must be adjusted to the overall business climate of the country (the risk factor), they must be aligned with what is practiced in countries with similar geological endowments competing for investments in the global market. When commodity prices are low, resource rich countries compete to attract private investments and governments might be tempted to forego a part of the rents in exchange for job creation, infrastructure investments, and social and community development expenditures at least partly funded by mining companies. In contrast, during

commodity booms, governments tend to focus on getting a bigger share of the rents.

A fiscal regime uses a combination of several tax instruments forming a fiscal package. Although tax regimes for extractive industries vary greatly, a combination of a royalty and the standard corporate income tax - sometimes with a tax targeted explicitly on rents - is frequently used. Such regime ensures that some revenue arises from the start of production, and that the government's revenue rises as rents increase with higher commodity prices or lower costs, which enhances its stability and credibility.

#### **The most common tax instruments used, and types of revenue flows include:**

» **Royalties:** Payments made to the owner of mineral resources for making them available to a company for specified periods of time. They may be a function of the quantity or volume extracted or, most often, of the sales value of the minerals extracted<sup>61</sup>. They provide revenues from the start of production but are insensitive to profit which makes them essentially regressive. To counter that, some countries have adopted sliding scale royalties or profit-based royalties;

» **Corporate Income Tax:** Taxes assessed on actual or presumed corporate income or capital gains. The definition of the imposable base is very important and requires clear rules for cost deductions, a calibrated depreciation regime (e.g. accelerated or straight-line depreciation), and a policy for "ring fencing";

» **Windfall Profit Tax and Resource Rent Tax (or Rate of Return Tax):** Taxes aimed at capturing extraordinary revenues (rents) during periods of high commodity prices. They are based on a fixed or sliding scale percentage of the difference between the market price and a lower base price multiplied by the production. They are typically assessed on cash-flow and have a different base than the Corporate Income Tax, since depreciation and finance costs are not included;

» **Withholding taxes:** Taxes on dividends distributed

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61. See Otto et al. (2006).

by companies to their shareholders, subcontractor payments to nonresidents, and interest payments;

» **Surface rental fees:** Fees levied on the issuance of a license or permit, usually as a proportion of the area occupied. They can increase with the number of years the license is held;

» **Custom duties and Export Taxes:** Taxes payable when goods cross a customs border, or when transactions in services are exchanged between residents and non-residents. Import duties generate early revenues, even before project start-up, but increase the project's capital cost. Some countries have introduced export taxes with the aim of encouraging investment on downstream value added of mineral commodities;

» **Bonus payments:** Additional revenues consisting of one-off up-front lump sum payments at signature, discovery, or first production. They can be set in legislation, negotiated, or biddable;

» **Property taxes:** Taxes payable on the use, ownership or transfer of land and equipment. They may be levied at regular intervals, as a one-off, or upon a change in ownership. They are usually calculated based on property value;

» **Goods and service taxes:** Taxes which become payable because of the production, sale, transfer, leasing or delivery of goods and rendering of services. Examples include sales taxes, VAT and excise taxes (i.e. product-specific taxes based on value, weight, quantity or strength);

» **Stamp duties/transaction fee:** A fee imposed on various types of business transactions. It may be assessed as a set fee per transaction type (usually nominal), or calculated as a percentage of the value of the transaction;

» **Transport fees:** Fees often based on the volume of material that passes over a road, is carried on a rail-line or passes through a port;

» **Equity dividends:** The distributed earnings allocated to government or state-owned enterprises, as

the owners of equity, for placing funds at the disposal of corporations.

» **Capital gains tax:** Taxes affecting profits arising from the sale of licenses, concessions or contract interests to third parties. These transactions often involve the sale of shares in companies that hold mineral rights (indirect transfer), rather than a sale of the rights themselves (direct transfer); and

» **Fines and penalties:** Compulsory payments imposed on units by courts of law or quasi-judicial bodies for violations of laws or administrative regulations.

The share the government receives of the resource revenues is called “government take”. Determining each element of the fiscal regime should correspond to specific policy objectives. However, the instruments in a regime interact, meaning that a piecemeal evaluation of individual instruments has limited value. The competitiveness and the long-term sustainability of the tax regime depends of an overall evaluation of the “government take” over the life of the project. IMF data<sup>62</sup> suggests that in mining, governments commonly retain 40–60%, but do not capture all possible sources of revenue erosion. Except for mining royalties, that are sector specific, tax instruments should be integrated to the extent possible with the general tax code.

When the government take goes up with higher production or prices, or with lower costs the regime is progressive. If the government take goes down with higher production or prices, or with lower costs, the regime is regressive. The emerging trend is towards some sort of “flexible predictability”, i.e. self-adjusting taxation approaches that allow mining operations to remain competitive in periods of low prices but are designed to capture an increasing amount of rents as prices increase.

van Meurs (2016) highlights the principle that, because of the volatility of commodity prices, mining requires price progressive fiscal terms for the entire price range, fostering greater alignment between the objectives of government and industry, and contributing to moderate extractive industries' cycles of

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62. See IMF (2012).

boom and bust. During periods of high prices, costs go up significantly due to lack of available supplies and services, not just for extractive industries but for the economy in general. Investments are made in new projects that often cannot resist periods of downturn. Therefore, excessive investment should be discouraged with a higher government take, as the tax regime should not be based in promoting the development of marginal deposits. During the bust, investments and operations are curtailed and result in significant layoffs of personnel. Government will have to deal with the resulting unemployment while, at the same time, supporting operations with a lower government take. The great variation in government take between periods of high and low prices puts an additional strain on government budgets. It is therefore important that during periods of high prices a high government take is applied to compensate for budget losses during low oil prices. This must be supported by macroeconomic policies that make budgets less dependent on commodity revenues through diversification of the economy, and more effective stabilization mechanisms (funds) during periods of high commodity prices.

In exchange, governments should refrain from including stabilization provisions in the law or in contract agreements. Stabilization clauses exempt the company from being bound by new laws or regulations that might be enacted that negatively impact its rights and obligations. However, far-reaching exemptions from the application of new legislation have expanded to environmental and social regulations, potentially preventing the government from adopting best practices for all the projects. As a result, countries started to narrow the scope of stabilization clauses, so that matters related to health, safety, environmental and social protection are expressly excluded<sup>63</sup>. Increasingly, stabilization clauses, when used at all, apply only to specific fiscal provisions and only for limited lengths of time tied to the time necessary for a company to repay its financing. In some countries, like **Chile** and **Peru**, stabilization clauses require companies to accept higher tax rates.

To create progressive fiscal terms for the entire price

range, it is advisable to align the time distribution of government revenues over the life of the project with industry expectations (less front-end loading and more back loading when the resource base allows for it), provided that a minimum government take is guaranteed during periods of low commodity prices (i.e. through a reasonable minimum royalty which is easier to collect). Better alignment can also be created by governments through: (i) increased geological and technical risk sharing; (ii) predictability, celerity, and transparency of procedures for licensing and auctioning permits; (iii) streamlined environmental licensing; (iv) quality of benefit sharing rules; and (v) local content and beneficiation requirements adapted to the context of the country.

A variety of instruments can be used to increase progressivity<sup>64</sup>. They include progressive royalties based on sliding scales which vary with prices or on annual profit-to-cost ratio bases; progressive corporate income taxes; resource rent taxes based on rate-of-return indicators or R-factor sliding scales; and windfall profit taxes, based on a percentage of the difference between a market price and a base price. The percentage can be fixed or a sliding scale.

Royalties are widely used in extractive industries tax regimes. **Argentina**, **Brazil** and **Colombia** have a conventional revenue-based royalty system. Their main advantage is that they do not require cost control and are relatively easy to collect. Royalties also provide a guaranteed income to governments during production. The main disadvantage of royalties is that they are regressive and front end loaded and therefore create a significant degree of lack of alignment with industry. Royalties could be made price progressive through sliding scales whereby royalty rate increase as commodity prices go up. Mining companies have argued that periods of high prices are also times that register steep increases in mining costs and that consequently higher royalty rates should be triggered by increases in the operational income, not by rising prices, as in **Chile** and **Peru**. These countries use the ratio of profits to costs in the current tax year. If the ratio exceeds a limit, the additional profits tax is triggered and it is applied to a statutorily defined operating income. In both

63. See BMZ (2016).

64. See van Meurs (2016).

65. See Otto (2017).

countries, the effective rate of the additional tax is progressive—as the profit ratio increases, the effective additional profits tax rate increases<sup>65</sup>.

A resource rent tax is commonly associated to the introduction of higher corporate income taxes when the project generates revenues for its shareholders that go beyond a certain level of profitability before taxes, or an agreed internal rate of return for the investment. The first adoption of such a tax can be traced back to the government of Papua New Guinea in 1977, but has not generated significant revenues to the country. A rate-of-return triggered additional profit tax imposes an additional tax when a statutorily set rate of return is exceeded (typically in the range of 20 - 25%). The rate-of-return-based calculation is based on the statutorily defined cash flow of the mine to date. Historically, these taxes were considered by many governments as too difficult to calculate<sup>66</sup>, but new accounting and calculation approaches developed by the International Monetary Fund have allowed for their introduction in countries like Liberia, Malawi<sup>67</sup>.

According to Chen and Perry (2015), from a government perspective there are two main concerns against the introduction of a resource rent tax instead of conventional (revenue-based) royalties: revenue stability and administrative efficiency. Since the rent from minerals arises only when accumulated revenues reach a level that is more than sufficient to cover the accumulated cost of mining, government would only begin to receive revenues from a resource rent tax after multiple years of production of a project. In addition, given the volatility of commodity prices, government revenues from a resource rent tax would be highly instable. Because of that, most advocates of this tax suggest combining it with a revenue-based royalty, though keeping the latter at a relatively low value. In addition, to the extent that the rent is calculated in a cumulative manner before the payout point, implementation of a resource rent tax requires accurate bookkeeping

and a sophisticated tax administration.

From a company point-of-view, the problem with resource rent taxes is that there is not a strong drop in the royalty or profit share percentages when the price goes down, since many are based on cumulative, not quarterly profits or revenues. Also at the end of the life of the project, resource rent taxes factors could be high and impeding the full recovery of the reserves<sup>68</sup>.

In conclusion, it appears that a tax regime purely based on fixed rates will fail to realize its full contribution to Treasury in periods of high commodity prices and will be prone to calls for renegotiation. It might lead to frequent adjustments and negative impacts on future investment. At worst, it could cause conflict, both at the national and local levels.

Revenue stability concerns suggest that a revenue-based royalty should be preserved as a minimum annual payment, on top of corporate income tax that, in principle, should tax all sectors in a neutral way. However, royalty rates for mining activities are sometimes too high and superimposing a resource rent tax on them could lead to over taxation and underinvestment. Thus, the introduction of a mining resource rent tax should be accompanied by a reduction of royalty rates (e.g., to 3 to 5%)<sup>69</sup>. It is good practice too, that flexible regimes are transparent and stable, and that the legislated taxes can be properly collected.

## B) TAX ADMINISTRATION

In countries that have mining tax administrations with limited human and technical capacities, and insufficient resources to improve tax collection, some of the flexible tax instruments mentioned above could be difficult to administer. Effective tax administration is very important, but complex regimes and fragmented responsibilities are often major impediments. The limited understanding of tax collection

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66. Australia's first attempt to introduce a resource rent tax in mining caused the demise of the prime minister. The proposed tax was developed after a government report (Henry Report 2010) called for the introduction of a uniform resource rent tax using an allowance for corporate capital system. This involved a cash-flow-equivalent tax levied on profit measured as net income minus an allowance.

67. See Otto (2017).

68. See van Meurs (2016).

69. Chen and Perry (2015) suggest that to better adjust to the cycle, royalty payments could be carried over, along with other resource rent tax losses and uplifted by the prescribed return allowance, and be deducted from the ultimate resource rent tax base. Alternatively, the accumulated royalty payments may be credited against the resource rent tax payable in future.

authorities on the principles of mining accounting has led some investors to benefit from tax loopholes in the form of a poor definition of the corporate income tax base and imprecise definition of taxable revenues and deductible costs; overly generous depreciation regimes; inadequate ring fencing of operations at the project level or for the entire sector; poorly designed loss carried forward incentives; transfer pricing (transactions among related parts below market prices), and other tax avoidance and base erosion mechanisms like thin capitalization, and excessive payments for headquarters' overheads and fees, and intellectual property. Other concerns include, for example, ineffective control of grades of products sold, and lack of proper accounting of sub-products contained in the main concentrate or metal or mining decommissioning.

The tax rules must clarify the definition of the allowable deductible costs for corporate income tax purposes and their allocation between expenses immediately deductible when incurred, and capital expenditures, to be depreciated under a specific method and duration. The definition of deductible costs can generate considerable debate unless clear rules apply<sup>70</sup>. Issues include the deduction of: (i) overseas headquarters costs (usually limited as a percentage of project costs); (ii) interest costs (subject to limits on debt and the application of market benchmarks on interest rates); and (iii) costs related to purchases from affiliated parties (addressed by applying OECD rules on transfer pricing or requiring demonstration of third party pricing equivalence). Depreciation provisions (also called capital allowances) are deductible from the corporate income tax base. Some countries may grant accelerated depreciation, while others prefer to impose a longer depreciation periods, as the annual rate of depreciation may significantly delay government revenue when accelerated depreciation applies. From a company perspective, the most favorable system is when all costs can be 100% written off as incurred for tax purposes. The least attractive system is when slow depreciation is required (for instance, 10% straight line depreciation). It should be noted though that the aggressive use of accelerated depreciation can lead to an erosion of the tax base. Transfer pricing refers to the pricing of sales to, or

purchases from, parties affiliated with the mining investor. It applies also to the supply of services and the terms and pricing of loans or credit instruments among related parties. Transfer pricing is considered abusive when underpricing a sale or overpricing a purchase results in shifting profits from a producing country to a foreign lower tax jurisdiction, resulting in a reduction of tax payments to the producing country. In the case of interest expenses, it is prudent to benchmark rates against market rates, and to limit the total debt allowed for purposes of tax assessment to a prescribed a debt-to-equity ratio ceiling<sup>71</sup>.

Ring fencing is a limitation on taxpayers' ability to consolidate income or deductions for tax purposes across different activities, projects, or license areas carried out by the same taxpayer in a country<sup>72</sup>. The main concern is with its scope. The usual rule is a restricted sector wide ring-fence for the mining sector in the country, not allowing non-sector activities to be deductible from the extraction sector and vice versa. To further restrict deferral of revenue, ring fencing could be done on a license basis, ensuring earlier government revenues by not authorizing immediate deduction of exploration or development expenditures from each new project against the income from other projects already generating income. However, this may discourage companies from undertaking further exploration and development activities due to the inability to claim deductions for such activities on new projects. But if the ring fence is around the mining activities rather than individual projects, it would be easy for companies to shelter their profits under new projects. The ring fencing based on a company's overall mining activity may also induce excessive mining investment ("gold plating"). Therefore, according to Chen and Perry (2015), a practical compromise seems to be project-based ring fencing that allows cross-project expensing of unsuccessful exploration expenditures.

Decommissioning requires the investor to close the mine, rehabilitate the site, and restore or remove any causes of danger or injury to the environment. Since there is no income against which to recover decommissioning costs once operations cease, de-

70. See Calder, J. (2014), and Cameron and Stanley (2017).

71. See Guj, Pietro et al. (2017), and Cameron and Stanley (2017).

72. The definition comes from IMF (2007).

tailed rules need to be made regarding plans, budgets, and cost deductions for corporate income tax purposes. It became common to require investors to establish from an early date a mine reclamation fund. This may be carried out under specific rules through payments made ahead of closure based on estimates of future decommissioning costs and placed in an escrow account at an approved bank. Decommissioning costs incurred in advance of closure are normally allowed as deductible expenses<sup>73</sup>.

Finally, tax treaties between home and host states often reduce withholding-tax rates imposed on dividends, interest, management, or technical service fees due by the subsidiary located in the host state to their home-state parents when they are domiciled in the tax treaty state. The risk is that the tax base of a project might be significantly eroded, with the withholding taxes reduced or even eliminated. Countries with significant flows of investment into their extractives sectors, and negligible outward investment flows of their own, must design treaty strategies to minimize this risk of tax base erosion and to adopt rules to prevent the routing of remittances to intermediate jurisdictions to exploit advantageous treaty provisions<sup>74</sup>.

### C) CASE STUDIES: PROGRESSIVE MINING ROYALTIES IN CHILE AND PERU

In **Chile**, the tributary framework for the mining sector, both for Codelco and the private companies, has changed over the years. In the early 2000s, a debate emerged about the benefits received by the foreign investors, considered by some people to be excessively large relative to their contribution to Treasury. The debate continued until the approval of the 2005 mining law (Law 20,026), establishing a specific tax on mining activities (royalty), starting in 2006. The royalty was levied on the taxable operating income of the mine company based on annual sales<sup>75</sup>.

Codelco's tax revenue contribution consists of: the payment of income taxes, including the "first category" tax whose rate is 20% effective, a surcharge of 40% (common to public companies in Chile) and a Specific Mining Tax; statutory transfers of export earnings from Codelco to the armed forces (10% of total); and a portion of the net profits for the year, which is agreed between the company and the Ministry of Finance.

The taxation of private mining companies consists of three taxes: the same income tax that applies to all companies; the so-called Additional Tax, a withholding tax for companies making remittances abroad; and a specific mining tax ("royalty") on mineral production. The royalty applies to operating income from the mining activity obtained by a company. The tax rate is progressive. It is between 5-14% for annual sales exceeding 50,000 metric tons of fine copper; and between 0.5-4.5% for operators with annual sales between 12,000 and 50,000 metric tons of fine copper. Production below 12,000 metric tons of fine copper is tax exempt<sup>76</sup>.

Copper's contribution to the total tax collection in Chile (both Codelco and private sector) went from a high of 34.2% in 2006, to only 9.1% in 2014. Royalty revenues are financing a Fund for Innovation for Competitiveness, which is administered by the Ministry of Economics. There is a National Council of Innovation for Competitiveness that advises the President with proposals on human capital development, dissemination of technologies and innovation policies.

Like most mining countries, **Peru** had a mining tax system based in three major components: income tax, withholding taxes and royalties. The mining royalty ("Regalía Minera") is not considered a tax but a payment made in consideration for the use of non-renewable resources and is not recorded as a tax income. The Income Tax is payable by all companies

73. See Cameron and Stanley (2017).

74. See Cameron and Stanley (2017).

75. Chile enters into stabilization agreements for mining investments made under a concession. Taxes specified in the agreement, applicable to the investment, as well as customs and foreign exchange provisions for the payment of costs and the repatriation of profits and capital, are frozen for terms of up to 20 years. See Fuentes (2009).

76. See African Natural Resources Center- ANRC (2016).

77. Stabilized rights include the corporate income tax, the free foreign currency transferability, the right to repatriate the total capital and dividends of the company, the right to use the most favorable exchange rate, the guarantee of no discrimination against labor recruitment regimes and export regimes, as temporary admission of goods and free economic zones. To be eligible, extractive industries companies must guarantee a minimum investment of US \$ 10 million. See Fuentes (2009).

and that represents a percentage of their profits at the end of the fiscal year (30%). However, mining companies sometimes negotiate rates higher than the national average, in exchange for a tax stability<sup>77</sup>. Taxes on Dividends are applied to the extent that they are distributed to the companies' shareholders, and there is an obligation for mining companies to distribute a percentage of their profits (8%) among their workforce.

Extractive industries recorded exceptional profits during the commodities boom. In Peru, these gains led to a national debate on the need to introduce a windfall profits tax to increase the government take. However, some mining companies benefited from stability contracts which sheltered them from the proposed changes. Even though revenues from mining taxes increased exponentially between 2004 and 2007, there was a sentiment that the Peruvian State was losing revenue. While the flat-rate profit tax failed to capture a significant share of the super profits, the mining royalties approved in 2004 (Law 28,258) did not apply to companies benefiting from stabilization contracts.

During his 2006 presidential campaign, President Garcia promised a review of mining contracts. However, after securing the election, the Garcia administration opted to negotiate with the mining companies a voluntary contribution for five years, called the 'mining program of solidarity with the people', was published in December 2006<sup>78</sup>. This contribution would serve to finance social investment projects in the companies' areas of influence, and by private trusts linked to them, in exchange for exempting them from royalty payments and windfall profits taxes.

With the election of President Ollanta Humala, a new negotiation with the mining industry resulted in September 2011 in the approval of three new laws that modified the tax regime for the sector: (i) the Modified Mining Royalties Law ("Nuevas Regalías Mineras"); (ii) the Special Mining Tax ("Impuesto Especial a la Minería"); and (iii) the Special Mining Burden ("Gravamen Especial a la Minería"). Together with the Income Tax Law, these laws define a tax burden for the mining sector that tends to be more progressive than the old regime<sup>79</sup>.

The new mining royalties incorporate a new basis for the calculation and payment of royalties. With the new legislation, companies' operating income is taxed instead of their net sales revenue. The royalty rate also changed and now ranges 1% to 7.14% depending on the operating margin. The Special Tax on Mining was created as a mechanism to tax income of companies that did not have tax stability contracts at the time became effective. It is applied on operating mining income based on a sliding scale, with progressive marginal rates ranging from 2% to 8.40%, and is deductible from the corporate income tax. The Special Mining Burden on is a voluntary levy but applied to companies that do benefit from tax stability contracts. It is computed on a quarterly basis also based upon operating income, with marginal rates ranging from 4% to 13.12%. Mining royalty payments, if applicable, are creditable against Special Mining Burden payments<sup>80</sup>.

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78. See NRGi and Grupo Propuesta Ciudadana (2016).

79. See Red de Justicia Fiscal de América Latina y el Caribe (2015).

80. See EY (2014).

# CONCLUSION » THE NEED FOR A COMMON VISION



## CONCLUSION » THE NEED FOR A COMMON VISION

Mining in Latin America and the Caribbean (LAC) is at a crossroads. The sector has led many countries in the Region towards greater levels of wealth and prosperity. However, starting in 2012, the end of the commodities boom left a generalized feeling on the population of resource rich countries that mining revenues were not being distributed fairly and that the industry failed to contribute to the economic development of the country and the communities affected by their projects.

Countries like **Brazil**, **Chile**, **Colombia**, **Mexico** and **Peru** have achieved world's dominant positions in the production of minerals, but their competitiveness has been hindered by a combination of factors that include the fall in commodity prices and declining levels of foreign investment; rising costs especially for energy and water; declining productivity driven by falling ore grades<sup>81</sup>, deeper deposits and complex ores<sup>82</sup>; and poor infrastructure. These technical and economic factors are aggravated by a lack of confidence in current arrangements for regulating the industry resulting from legal insecurity created by frequent changes in the rules of the game, and recurring gaps and overlaps in the legislation (and sometimes conflicting judicial decisions).

The current period of uncertainty has been aggravated by knowledge gaps and weaknesses in key institutions responsible for the sector. For example, the coverage and detail of geological information could be increased and integrated in efficient infor-

mation systems, facilitating investments in exploration, allowing for proper monitoring of mining titles and informal activities, and providing online and updated information to citizens about the state of the sector. Most LAC countries are facing high levels of informality. For example, according to the Colombia's 2011 Mining Census, 75% of the 9,044 Mining Production Units that do not have a permit in the 23 departments surveyed, are small scale. Similarly, only 14% of these Units without a permit keep accounts of their activity, while 77% do not have any type of business tool for the proper administrative development of their mining activities<sup>83</sup>.

Institutional weaknesses also translate in the lack of coordination and alignment within government agencies - both horizontally across different line ministries, and vertically among the different levels of government - regarding national and territorial development priorities, planning and service delivery. Centralized management and contradictory legal and institutional arrangements governing public sector institutions - especially the relation between the mining and the environmental authorities - create tensions between central governments and sub-national authorities, mandated to manage territories in the context of decentralization. Government's deficient service delivery capacity in key areas such as infrastructure, health and education, is compounded by mixed levels of governance and implementation capacity, particularly at the subnational level, with no consistent framework to guide decentralization across the different levels of the administration.

Given the lack of alignment in dealing with mining's environmental, socio-economic, and territorial impacts, central government's top-down decisions are

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81. Declining ore grades mean that more ore must be processed to get the same quantity of metal. When Escondida began production in 1991, average ore grades in Chile were 1.4% copper. At present, the global average ore grades for copper mines is approximately 0.62% of Cu content. In 2016, the world's largest copper mine had a mineral resource base of about 27,000 million tons at 0.52% copper. Escondida is investing US\$ 4.2 billion on a new concentrator, its third, and US\$ 3 billion on a water desalination plant to counteract falling ore grades and help boost production to 1.2 million tons of copper annually in the next decade. See CSIRO (2014).

82. The need to dig deeper to access reserves is another factor driving up mining costs. For example, Codelco is investing US\$5.1 billion in its El Teniente New Mine Level project in Chile, to allow for extraction 300m below the current operating level and maintain output at a rate of 432,000 metric tons a year. Codelco is also converting its Chuquicamata open-pit into an underground operation at a cost of US\$ 4 billion. See <https://uk.reuters.com/article/chile-copper-escondida/chiles-escondida-copper-mine-looks-to-counteract-falling-ore-grades-idUKL2N17A2A8>

83. See MINMINAS- Ministerio de Minas y Energía (2016).

84. For example, the environmental ordering in Colombia is carried out under a watershed approach (in accordance with the provisions of Decree 1640 of 2012, the POMCA - Plan of Management and Management of Watersheds). At present, the POMCAs are not articulated with the Territorial Management Plans of the municipalities, since an integral assessment of the territory in all its aspects has not been conducted, neither the analysis of opportunities and constraints for the different uses of the territory. See MINMINAS- Ministerio de Minas y Energía (2016).

becoming difficult to enforce. Complex regulatory requirements and administrative bottlenecks - such as in the procedures associated with licensing - contribute to delays in projects, and to a lack of trust among stakeholders.

There is no shared vision between the mining industry and other stakeholders related to land use<sup>84</sup>, and insufficient local and regional territorial and environmental planning to enhance sustainability and harness economic linkages. For example, countries have not developed a strategy between the public and the private sectors allowing for a coordination of information between demand needs from the mining companies on the quality and quantity of goods and services required for their production processes, and national, regional and local supply (companies from other productive sectors) that could meet the requirements of mining in a competitive manner.

The challenges facing mining in LAC cannot be addressed through piecemeal action. The industry faces today a new set of environmental, social, economic, and political challenges as it has been plagued by significant levels of conflict and resistance to mining projects. Investments have been delayed or stopped because of environmental authorities' resistance to mining developments in large parcels of the territory, and the unwillingness of local communities and civil society organizations to grant access by legal mining permit holders to areas covered by their licenses, because of a weak track record in sharing benefits with them. Dissatisfaction with mining prevailed despite continuous efforts by central governments to attract foreign investment to generate tax revenues that pay for expensive social policies. A 'business-as-usual' approach can lead to increased conflict and paralysis - as seen in Colombia and Guatemala - or to the outright ban of mining in the entire country like in El Salvador.

To overcome these challenges, a coherent mining policy must be formulated, mining legislation must be harmonized with other sectors and intervention of different levels of government aligned. This requires participatory approaches to define integrated legal and institutional frameworks.

Mining has the potential to act as a platform for change. By strengthening its competitiveness and productivity, mining can contribute to generate the conditions for a robust network of innovation involving government, industry, suppliers, and the scientific community, so that the country participates into global value chains<sup>85</sup>. Through advances in research and development and technological innovation mining can contribute to issues that hinder the productivity of the Region, can drive the growth of a new mining services sector that helps to diversify the economy, and can take a prominent position on issues such as environmental and social sustainability<sup>86</sup>. However, this sort of progress will not be possible without successful collaboration across industry, government, civil society and the research community. This calls for these different stakeholders to unite behind a shared medium to long-term vision consistent with overall national development priorities.

The vision must be the result of a nationwide multi-stakeholder consultative process with the strategic intent of formulating a shared approach on how mineral resources development can contribute to broad-based development. It aims to capture national aspirations and views on the developmental role of the minerals sector and generate a shared blueprint (the vision) on mining and development as well as an integrated implementation plan and a road map for all stakeholders, reflecting their shared role in development<sup>87</sup>.

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85. To stimulate this process, governments could attract large global suppliers willing to develop their capacity in the Region in collaboration with local suppliers, and to integrate them into global value chains. Another possibility is to co-finance collaborative research, development and innovation (R & D & I) initiatives by mining companies and their suppliers that cover matters related to exploration, operations, sustainability (including energy and water) and community development. See Comisión Minería y Desarrollo de Chile and Consejo Nacional de Innovación y Competitividad (2014).

86. It should be noted however that LAC countries still lack a culture of innovation and underperform in technology transfer and commercialization. They suffer from low levels of investment in innovation, technology and development, both within companies and in research centers and academia. Most R&D is financed by governments and carried out in the universities with few connections to the business sector. See CSIRO (2014).

87. This definition is based on the Africa Mining Vision, adopted in February 2009 by the African Union Assembly of Heads of State and Government as a framework to promote mineral resource-based development on the entire continent, and the guidebook to help member States to adapt it at the national level into Country Mining Visions through a multi-stakeholder consultative process. See AMDC (2015).

**Chile** was a pioneer in developing and implementing a vision for the country's mining sector, through the work of the Commission for Mining and Development<sup>88</sup>, a multi-stakeholder initiative supported by Government which laid out a high-level roadmap for building a 'virtuous, sustainable and inclusive' mining industry by 2035. This work is now being continued through the Value Mining Alliance<sup>89</sup>.

In **Peru**, the report "Towards a Vision for Mining in Peru in 2030" was developed in 2016 under the leadership of a Driving Group comprising senior personnel from international mining companies operating in Peru and representatives of the National Dialogue and Sustainability Office of the Presidency of the Council of Ministers (ONDS-PCM), with technical accompaniment provided by the United Nations Development Program (UNDP)<sup>90</sup>. The Vision emphasizes the need to focus on enhancing the economic contribution of mining, and on ensuring alignment with the SDGs and territorial development priorities.

**Colombia** also went through the same process with the publication of a report by the Dialogue Group on Mining in Colombia (GDIAM), "Proposals for a Shared Vision on Mining in Colombia Roadmap"<sup>91</sup> and the release in April 2016 of a new mining policy for Colombia, entitled "Basis for Future Mining"<sup>92</sup>.

Developing a vision requires knowledge of the environmental, social and cultural conditions in which mining operates, and the integration of effective citizen participation around its decision-making processes. An appropriate tool to implement it is territorial planning aligned to the country's long-term development objectives and integrated in regional and municipal development plans. As described by GDIAM (2016), the participatory elaboration and implementation of territorial planning, integrated at the municipal, regional and central levels, can establish the conditions of use and occupation of the territory, so that different activities are carried out according to the ecological, economic, cultural and social aspects of these areas, including the defini-

tion of areas where economic activities such as extractive activities cannot be developed.

To achieve this goal, mining legislation should be adapted to territorial management and harmonized with other sectors using participatory approaches to define integrated legal and institutional frameworks to manage the territories' natural resources in the context of coherent decentralization processes<sup>93</sup>. It also calls for the aligned intervention of different levels of government. Institutional strengthening and regulatory adjustments are needed to allow subnational governments to undertake coordination and planning functions, while mining companies need to be more aware of the cultural and social background and the economic needs of the communities in their areas of influence, so that they can integrate them into their own operational plans. While access to the mining revenues is important, inclusion also means the incorporation of community priorities and values in the operational and regulatory processes of the sector, and in related decision-making processes such as resource conservation and land-use planning<sup>94</sup>.

The process must be led by subnational governments in association with multi-stakeholder structures where mining companies need to play an increasingly active role. Since most governments lack the capacity to design and implement this sort of horizontal and vertical coordination, coordinated efforts between the public and the private sector are essential, supported by active civil society engagement. Most conflicts continue to be driven by community complaints about companies' failing to provide promised benefits, including jobs and economic opportunities, and their insufficient participation in the distribution of benefits. Mining companies should move beyond compliance, redefine the boundaries of corporate social responsibility and upgrade participatory processes and decision-making mechanisms around mining development to align them with sustainable development and patterns of land-use planning of the territories where

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88. See Commission for Mining and Development of Chile (2014).

89. See (Alianza Valor Minero 2015).

90. See Driving Group (2016).

91. See GDIAM- Dialogue Group on Mining in Colombia (2015)

92. See MINMINAS (2016).

93. See Bastida and Bustos (2017).

94. See Bebbington (2015).



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they are embedded. They should propose the institutional arrangements needed for the coordination of their social investments with development goals agreed with communities and aligned with territorial priorities. They should participate in territorial planning and adopt cooperative approaches to engage with other sectors to identify synergies and contribute to economic diversification, facilitating the development of other economic activities, such as agriculture, livestock, agribusiness, tourism and the preservation of ecosystems.

Finally, the vision should also consider efforts to integrate small-scale and artisanal mining into the formal economy. Most governments already have programs in place to formalize small-scale and artisanal mining and to address the problem of illegal mining, but a review of current approaches is needed since these mechanisms appear to be of limited effectiveness.

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