

CHAPTER 3 – www.eisourcebook.org

3.2 Key Differences

Differences within the Extractives Sectors It is a mistake to assume too much homogeneity within each of the main extractives sectors. Within the hydrocarbons sector, there are significant differences between oil and natural gas, and between conventional and unconventional hydrocarbons. Within mining, diversity is significant. In the small volume, high value category there are gemstones, gold and the platinum group of metals; in the high volume, low value category, there are the industrial minerals such as coal, iron ore, copper, nickel, tin, bauxite and soda ash, for example. There are also construction materials such as sands, gravels, granite and dimension stone, for example. The many differences ensure that very few ‘one size fits all’ prescriptions or options are feasible.

Differences of Degree Some of the differences among the EI sectors are matters of degree rather than of quality. For example, all of the EI sectors will leave environmental and social footprints; but some will be larger than others. Historically, the mining sector has been the most contentious in this regard because its operations are entirely land-based, often involve moving large masses of land¹ and affect local communities living or working in the area. However, there are exceptions, with environmental degradation from oil spills in sensitive ecosystems being a prime example. Spills include those in the Niger Delta, Prince William Sound in Alaska (the Exxon Valdez tanker spill), and the Gulf of Mexico (the Deepwater Horizon disaster). Such events may suddenly and radically change perceptions about the environmental footprint of EI projects. Similarly, all EI sectors generate rents, but rents in the natural gas and mining sectors are generally more modest than those obtained in the oil sector. These differences, even where they are only matters of degree, are often reflected in legislation or fiscal regimes.²

Exploration At the exploration stage of EI sector development, there are two areas where differences are identifiable: (1) procedures for contract award, and (2) security of tenure. Mining exploration often takes place in a context of extremely limited prior geological knowledge or data. The information necessary to assess the commercial potential of an area is acquired incrementally, at relatively low cost, over an extended period of time. This appears to have led to the practice of awarding contracts on a first come, first served (that is, non-

¹ Where deep mines are involved, the tailings present disposal issues, but do not move large quantities of land.

² For a comprehensive comparison of oil and gas fiscal regimes, see Ernst and Young (2013). *Global Oil and Gas Tax Guide 2013*. London: Ernst and Young. Available at: [http://www.ey.com/Publication/vwLUAssets/EY-2015-Global-oil-and-gas-tax-guide/\\$FILE/EY-2015-Global-oil-and-gas-tax-guide.pdf](http://www.ey.com/Publication/vwLUAssets/EY-2015-Global-oil-and-gas-tax-guide/$FILE/EY-2015-Global-oil-and-gas-tax-guide.pdf) (last accessed 7 April 2016).

competitive) basis, and to the separation of exploration and exploitation rights. However, recent trends in the mining sector indicate that the practice of integrating exploration and exploitation rights (as is common in the oil and gas industry) is emerging and, increasingly, mining exploration is unlikely to take place if an investor does not have reasonable confidence that a developmental right is assured.

In the petroleum sector, where more attention is paid to the compilation of pre-award geological information and the data required to form a preliminary opinion on commercial potential can be more quickly compiled, licenses are typically awarded on a competitive basis by negotiated bid or auction.³ Further, in contrast to the historical practice in the mining sector, the award of exploration rights in oil and gas seamlessly guarantees rights to develop and produce in the event of commercial discovery. This is usually attributed to the fact that definitive demonstration of commercial potential in petroleum requires substantial investment outlays in the drilling of risky and expensive exploration wells, which can often result in failure. These are generally considered risks and expenditures that would not be undertaken without security of tenure.⁴

By contrast, the appraisal stage in petroleum is characterized by fewer risks than mining. For mineral deposits there is a wide range of uncertainties about the ability to mine and process a deposit and market a suitable product, requiring further work. Once petroleum has been identified in commercial quantities however, any further appraisal is mostly limited to achieving optimal recovery⁵.

Degree of Market Integration The absence of competitive global or even regional markets makes it difficult to commercialize natural gas, and has led to special contract tenure and fiscal provisions specific to the natural gas sector. The absence of markets has meant that natural gas deals have to integrate vertically all phases of commercialization from the point of extraction to the point of final consumption, often across international boundaries and different investor groups. This has proved challenging for regulation, pricing for fiscal purposes, and the design of fiscal terms. Mining operations, which are often integrated from mine to refinery, can face the same problems. However, even though oil companies are often vertically integrated from exploration to selling final retail products at the gas pump, the difficulties raised by vertical

³ See Reece, D. (1978). *Competitive Bidding for Offshore Petroleum Leases*. Bell Journal of Economics, Vol. 9, No. 2, pp. 369-384.

⁴ Barnett, S., and Ossowski, R. (2002). *Operational Aspects of Fiscal Policy in Oil Producing Countries*, IMF Working Paper WP/02/177. Washington, D.C.: IMF Media Services Division, pp. 8-9.

⁵ BC Land, *The Similarities and Differences between Mining and Petroleum Investment: A Comparison of Investment Characteristics, Company Decisions and Host Government Regulation* (1994), p.257.

integration do not usually arise in the oil sector because it is a sector that is overwhelmingly characterized by broad competitive markets at each segment in the value chain.

Variety of Operations In mining, the varied composition of the industry (with a wide variety of operations, from the very small to the very large) has implications for the design of a legal framework applicable to mining operations. Mining laws and regulations usually specify great detail regarding procedures and institutional structure, roles, and mandates since they have to apply across a diverse sector. In the oil sector, there is also a considerable diversity of operations, but less so than in mining. For example, processing constitutes an important and complex part of the production process in mining, increasing the exposure to production performance risks. External inputs, support infrastructure and labour are all present to a greater degree in mining than in petroleum, increasing the risks of costs caused by interruption. This may explain why petroleum sector laws and regulations tend to be less intricate, but are usually followed by a detailed contractual approach to rule-making. Nonetheless, the frequent use of model contracts suggests a similar need for standardization in the oil and gas sector, and the recent publication of a model contract for mining development shows that this approach is also applicable to mining⁶.

Institutional Differences Among the various institutional differences between the sectors, three deserve mention by virtue of their high degree of visibility. Firstly, the use of national resource companies (NRCs) has been significantly less successful to date in the mining sector than in oil and gas. Whereas a push for NRCs in mining and nationalization programs in the 1970s resulted in a reversal a decade later, a similar reversal did not take place in the oil industry. Gas companies have usually included a significant state element in transportation and distribution and sometimes in exploration and production. The emphasis on state involvement is therefore a contrasting feature between mining on the one hand and oil and gas on the other. The authors of a study on state ownership conclude, however, that the oil and gas experience “shows... that such poor performance is not a corollary of state ownership... The success of a state-owned mining company is determined by the governance framework/structure, assets, and capital base”⁷.

A second difference is that with respect to revenue collection, a national taxation authority will usually tend to have a greater influence than the Ministry of Finance in the mining sector.

Thirdly, the commercial structures will differ. In petroleum projects, unincorporated joint ventures (JVs) are common (for tax or financing reasons, such as risk spreading or possibly

⁶ International Bar Association, *Model Minerals Development Agreement* (2011).

⁷ Raw Materials Group, *Overview of State Ownership in the Global Minerals Industry* (2011), p. 33.

reasons connected with technology). Capital is provided separately by the parties to the JV and the benefits are shared among them. Tax authorities have an interest in understanding these arrangements (see *Source Book Chapter 7*), not least to monitor costs. By contrast, in mining, such JVs are much less common, and set up after discovery and appraisal of a deposit to facilitate commercial development. Often, major companies tend to take majority ownership stakes in locally incorporated vehicles.

Artisanal mining A significant feature of the mining industry is the prevalence of large numbers of artisanal miners. This is a common feature of many developing countries in Africa, Latin America and Asia. The diversity of ASM should not be underestimated however. The category embraces any mining that is conducted with little machinery and by miners that possess few legal rights, if any. Such mining is often the only means of survival for the miners and their dependents, thus having a close correlation with poverty. It is notorious for its negative environmental impacts, lack of safety and social impacts. Previously, the dominant policy approach has been to criminalize their activities but increasingly they are seen as important in the overall development of a country's mining sector. *This has no counterpart in the petroleum sector.*

The influence of these special characteristics of EI policies and practices will become apparent in the EI value chain **Chapters (5 – 9)**. The key differences between the two main EI sectors and specifics of each are summarized in **Boxes 3.1, 3.2 and 3.3**.

Box 3.1: Key Differences between Petroleum and Mining

1. overriding significance of exploration in the petroleum sector contrasts with mining;
2. scale of rents is often much higher in oil than in mining;
3. procedures for contract award and security of tenure;
4. legal frameworks: detailed legislation is favored in mining while similar detail is typically found in the oil and gas sector only in model contracts;
5. State-owned companies have been much less successful in the mining sector than in the hydrocarbons sector;
6. the petroleum sector often uses the production sharing contract which is non-existent in the mining sector;
7. prevalence of artisanal miners distinguishes mining from petroleum and presents important policy issues; and
8. taxation in mining tends to favor royalty and profits taxes, while in the petroleum sector the widespread use of production sharing presents a more complex picture, with a wider range of taxation rates being common too.

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Box 3.2: Oil and Gas Specifics

- National Resource Companies remain popular in most oil and gas producing countries, more so than in the mining sector;
- usually, distinct laws will be made for oil and gas activities and for the mining of other minerals. Inevitably, this difference in choice of legal design appears to suggest the existence of underlying differences between the two sets of extractive industries;
- in the oil and gas sector, a framework approach to legislation is often preferred, with a higher degree of reliance on a related model or standard contract for exploration and exploitation than in mining;
- Three types of agreement govern the relationship between a host government and investors in upstream oil and gas activities: the concession or licence, the production sharing agreement and the risk service agreement. Of these, only the first is commonly found in mining;
- Most oil and gas agreements require the contractor to purchase a proportion of their goods and services within the host country from local suppliers, to promote linkages to the local economy. Similarly, they require a preference to nationals of the host country, and the use of training programs to transfer skills and create employment;
- Stabilization clauses are commonly used in oil and gas agreements;
- Natural gas discovery and development is commonly treated differently to oil in the basic agreement, with a longer period being given to the appraisal of a gas discovery and fiscal provisions being designed to reflect its different profitability;
- Contract provisions may require priority allocation of gas to the domestic market and/or set conditions for the authorization of export sales;
- Gas contracts contain detailed valuation clauses setting out how wellhead prices are to be determined;
- In award procedures, it is desirable and increasingly common practice that applicants for awards should be pre-qualified;
- Where significant geological data is available and investor interest is high, competitive auction is generally considered the best option; and
- In the award of oil and gas rights, it is the work program that generally controls, usually combined with a financial/fiscal variable, such as a bonus, royalty or profit/production share.

Box 3.3: Mining Specifics

- access to land is the starting point for the mineral exploration and mining process;
- ownership of sub-soil resources needs to be legally specified.
- the State specifies mineral rights, generally either exploration or mining licenses, in exchange for license holders to undertake exploration or development work;
- for mining, unlike for oil or gas, established practice includes the offering of exploration on a first come, first served basis due to a lack of both geological information and investor interest;
- however, there is now generally more data available and hence greater interest in obtaining exploration licenses;
- so, whilst first come, first served will continue to be appropriate for areas that are largely unexplored, good practice is for a government to offer licenses on a competitive bidding basis in situations where geological data is available and where there are strong indications of multiple and competing interest;
- mining agreements should not:
 - o include preferential-to-law investor fiscal terms, nor 'most-favored company' provisions, nor provisions for their own extension to cover new areas.
 - o provide license holders with long-lived exploration rights (such as exploration rights that last longer than a decade).
 - o allow investor 'land-banking'; rather, there should be an obligation to take forward substantive work.
 - o tie up very large amounts of land relative to the size of the area to be mined during the expected life of the mine.
- large numbers of artisanal miners are common in the mining sector of several developing countries. They are notably present in mining for gold and precious stones. Good practice lies in formalization and legalization of certain types of ASM.