

# CHAPTER 3 – [www.eisourcebook.org](http://www.eisourcebook.org)

## 3.3 EI Sector Dynamics

Most accounts of the EI sector emphasize the wide diversity of their structure, noting size and ownership patterns<sup>1</sup>, and changing trends in them<sup>2</sup>. *These features continue to evolve*. Research in recent years has explored the important role that National Oil Companies (NOCs) now play in the international oil and gas industry, for example<sup>3</sup>. Similarly, there has been research into the role of new players in the global mining industry and into junior companies and their effectiveness, particularly at the exploration stage, where they are assumed to have an advantage, and where they are increasingly in evidence, especially in sub-Saharan Africa<sup>4</sup>. Some research has been driven by the awareness among policy advisers that such companies regularly employ the panoply of international taxation rules to maximize their advantage, presenting a challenge to governments in states with poorly developed fiscal regimes<sup>5</sup>.

As circumstances change, many investors are accustomed to sell an interest, merge or make other acquisitions, as they think is appropriate in their pursuit of value. The decisions they take will usually be made within a framework of corporate operations that goes well beyond those of a single country, and justified to stakeholders who are in the vast majority of cases unlikely to reside in the country hosting the investment in its extractives. These and other ways in which the contemporary EI industries respond to exploration, development and production activities in their international operations may be too little understood or clouded by a lack of information in host countries. This can have negative effects on the design of effective public policies.

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<sup>1</sup> For example, UNCTAD (2012) Virtual Institute Teaching Material on The Economics of Commodities Production and Trade: Oil, Gas and Economic Development, New York and Geneva: United Nations; P Crowson, *Mining Unearthed* (2008)(Aspermont, UK).

<sup>2</sup> Ernst and Young: *Business Pulse: Exploring Dual Perspectives on the top 10 risks and opportunities in 2013 and beyond*, Oil and Gas Report (2013); D Humphreys, *Transatlantic Mining Corporations in the Age of Resource Nationalism* (2012), Transatlantic Academy: Washington D.C.

<sup>3</sup> S Tordo, BS Tracy and N Arfaa (2011). *National Oil Companies and Value Creation*. World Bank Working Paper No 218; DG Victor, DR Hults, M Thurber, *Oil and Governance: State-owned enterprises and the world energy supply*. Cambridge University Press, Cambridge; V Marcel, *Oil Titans: National Oil Companies in the Middle East* (2005), Brookings Institution Press. Contrast their more tentative role in the mining sector: Raw Materials Group, *Overview of State Ownership in the Global Minerals Industry* (2011), World Bank, Washington DC.

<sup>4</sup> D Humphreys, *The Remaking of the Mining Industry* (2015), Palgrave Macmillan, London (restructuring during the boom years caused largely by China's industrialization during that period).

<sup>5</sup> See for example, several of the contributions to Keen, McPherson and Daniel (2010).

### Box 3.4: East African Hydrocarbons

A shift in the locus of energy transactions from West Africa to East Africa during the boom years was driven by the sale of concessions and licences, and by acquisitions. The sale of a 66 per cent interest in three exploration blocks in Uganda by Tullow, which raised US\$2.9 billion, was the largest single deal. In Tanzania, the energy transaction hotspot in 2011, activity centered on the acquisition of Dominion Petroleum by Ophir Energy and on investment in exploration licences by various smaller players. In Mozambique, the Thai energy company PTT purchased Cove Energy for US\$1.9 billion, thus acquiring a stake in the rich gas fields off the coast of Mozambique. In August 2013 a further sale was made in Mozambique: ten per cent of a large gas field was sold by Anadarko to the ONGC (India) for US\$2.64 billion.

*Sources: Africa Progress Report 2013; and Source Book*

For an illustration of how this pattern of buying and selling assets can impact on a country's development plans, the rapid growth in hydrocarbons activity in East Africa during the boom years provides plenty of relevant material (see **Box 3.4**).

**Buying and Selling Assets** The typical ways for internationally operating companies to obtain access to new reserves need to be understood. Exploration activity is only one way for companies to gain access to reserves. Companies in the EI sector routinely buy and sell their interests through mergers and acquisitions (M&A). In the hydrocarbons sector it is common for the buyers to be cash-rich National Oil Companies from countries with insufficient domestic resource bases such as China and India. In 2011 alone, the value of upstream M&A activity increased by almost 70 percent to reach US\$317 billion<sup>6</sup>. Cash-rich NOCs from China and South Korea played an important part in that activity. In 2012 one of China's largest oil companies, CNOOC, purchased the Canadian company, Nexen, for US\$15.1 billion. It thereby acquired 900 million boe (barrels of oil equivalent) of proved reserves and 1.222 billion boe of probable reserves, plus contingent reserves of 5.6 billion boe, mainly in Canadian oil sands<sup>7</sup>. At virtually the same time, another Chinese company, Sinopec, acquired a 49 percent equity interest in Talisman Energy's UK operations for US\$1.5 billion.

<sup>6</sup> Ernst and Young Oil & Gas M&A in 2011: : <https://webforms.ey.com/GL/en/Newsroom/News-releases/Oil-and-Gas-M-and-A-in-2011-volume-up-values-down>. The previous year's figures for M&A are in: Julian Fennema, Industry Overview, Cairn Energy PLC Annual Report 2010: [http://www.cairnenergy.com/files/reports/annual/ar2010/2010\\_annual\\_report.pdf](http://www.cairnenergy.com/files/reports/annual/ar2010/2010_annual_report.pdf) (last visited 7 September 2013).

<sup>7</sup> *Oil & Gas Journal*, 30 July 2012, p. 26.

For an IOC, this kind of sale to an NOC (or other) buyer can represent a way of raising funds for new projects, but it can also be a way of generating a return from selling an asset that has been created by identifying commercially viable reserves. Its market value is derived from its future production potential. As the project matures, the share value increases, and a sale follows. This kind of IOC has a different business model from that of the better-known integrated oil and gas company (Exxon Mobil or Shell are examples of such companies): instead of producing oil from a successful exploration effort to realize a steady stream of available cash to return to its shareholders in the form of dividend payments, it sells the asset at an early stage. In this way it avoids the complexity of bringing a large find into production, drawing upon large upfront investment and often requiring a joint venture structure to finance the development. Other IOCs may choose to produce any reserves found themselves, just as they may acquire new projects in order to gain access to the reserves they contain, and thereby increase the volume of reserves under their control (without having discovered them in such cases).

A similar trend is evident in the mining sector, where the level of spending on mergers and acquisitions tends to be greater than that on exploration and development. In 2011 the total value of M&A deals rose by 43 percent to US\$ 162.4 billion, with mega-transactions of one billion dollars or more accounting for two thirds of total transaction value<sup>8</sup>. Gold and coal were the dominant commodities in these transactions. In 2012, nearly one in three mining companies was reported to be considering an expansion by means of M&A in the coming 12 to 24 months. When it occurs, such activity reflects a transfer of ownership of the present stock of mines and associated processing facilities. Inevitably, its value is significantly higher than the value of annual additions to that stock, which derives from exploration and development. Just as in the hydrocarbons sector, junior companies will expect to gain their rewards by selling on any discoveries to larger mining companies for exploitation.

From the above, it should already be clear that *the business models of companies in EI activities are far from uniform and need to be understood by governments and their advisers in designing policies for this sector*. There are in the EI sector companies that can be classified as large, integrated IOCs; junior or 'independent' IOCs; and NOCs, which can be internationally operating or regional or simply of national scope in their operations. The company that is likely to sell its asset in the event of an exploration success is also usually one with a higher than average appetite for risk, and that can have advantages to governments looking for a 'first-mover' to generate interest in their territory.

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<sup>8</sup> Resource Investing News, 1 March 2012: Mining Companies Poised for Mergers and Acquisitions, KPMG Study Shows; <http://resourceinvestingnews.com> (last visited February 2013).

**Policy Effects** Policy needs to take into account the real differences among types of company and the M&A dynamic arising from the maturity of prospects from exploration to extraction, and a shift that commonly occurs from junior to more major producers. This is particularly evident in the petroleum sector where the investment returns on successful projects tend to be higher and pay-back periods tend to be shorter than in mining. Decisions need to be taken about the kind of companies that a government wishes to see become active as investors within its borders. Many years ago, the Norwegian government policy was organized around its preference for the larger, integrated companies in its emerging hydrocarbons sector, while its North Sea neighbour, the UK, favoured the entry of a diverse range of companies into offshore exploration activity. Nor is this a matter that affects policy only at the very beginning of the value chain (the award of rights stage). It also has impacts at later stages, *with M&A activity being prevalent throughout*. This is to some extent the lifeblood of a healthy industry but it is also a flow which governments will typically seek to maintain a close eye on. In particular, they will wish to ensure that the environmental conditions associated with the license to operate are carried over to the new company.

**South-south Investment** A significant change in recent years has been the growing role of EI companies from the emerging economies, in terms of supply, demand and investments overseas, especially in low-income countries. In this group, China, India, and Brazil are the countries whose national or private companies have made the most notable impacts on the international EI scene. Russia is also one of the countries that provide a home to new corporate players, even though it is not located in the South. Companies from other countries such as Malaysia and Thailand (hydrocarbons), Peru (silver), South Africa (platinum) and Botswana (diamonds) have made significant impacts on global EI markets in recent years. Countries in this group are taking a much larger share of global spending on exploration in the mining sector, amounting to 60 per cent, according to one study<sup>9</sup>.

Much of the literature on the development implications of EI has focused upon the impacts of FDI from OECD or developed countries or 'north-south' flows. However, the rise of these players from emerging economies, and so-called BRICs in particular, raises questions about how 'south-south' flows will affect established patterns, which it is still too early to answer. As David Humphreys notes, in a study of such companies in the mining sector:

“[I]nvestors from these countries sometimes bring a rather different set of perspectives to their overseas investments, emphasizing, on the one hand, raw material security of supply considerations along with the commercial prospects of a

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<sup>9</sup> D Humphreys (2009), *Emerging Players in Global Mining*, p. 2

mining project and, on the other hand, the benefits of such investments taking place within the context of a broader government-to-government financial and cooperation agreement”.<sup>10</sup>

The various kinds of company that are typically found in the oil, gas and mining sectors may be distinguished according to one or more of five principal indicators: ownership structures; size; the resources they concern themselves with; risk strategy and method of financing. They are summarized below.

### 3.3.1 Oil and Gas

*Large, integrated companies* which operate internationally at all stages of the petroleum cycle: exploration, production, transportation, refining and marketing. These are usually known as the IOCs and are privately owned for the most part, based in the USA and Europe. The six companies commonly attributed to this group are BP, ExxonMobil, Shell, Chevron, ConocoPhillips and Total. Sometimes called ‘super-majors’, these companies account for about two thirds of the world’s Exploration and Production (E&P) investments, with the balance being invested by NOCs. They are especially prominent in deep-water exploration and development and LNG projects where their size and resources allow them to manage and finance such projects more easily than other companies, and to face the risks that these projects entail.

*National Oil Companies (NOCs)* are common among resource-rich states, with around 90 percent of the world’s oil and gas reserves under their control and 75 percent of the production. The largest is Saudi Aramco (Saudi Arabia). Some NOCs have become more and more active beyond their home base, increasing competition with the more established IOCs for access to new or existing petroleum reserves. Examples of companies that have ventured outside their national territory are the Chinese companies, CNOOC, CPNC, and Sinopec, the Indian ONGC, Petrobras (Brazil), Gazprom (Russia) and Petronas (Malaysia). NOCs are also used by their home states as vehicles to secure much needed energy resources for domestic industries’ needs.

*Junior*, sometimes called independent, companies do not have the high overhead costs of the IOCs. Their size can vary considerably, with the smaller ones typically hoping to significantly

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<sup>10</sup> Ibid (2009), p, 21.

profit from the sale of promising prospects, sometimes to larger 'independent' companies. They are usually prepared to accept higher risks at the exploration stage, both in terms of the hydrocarbons they target and in terms of the countries in which they explore. For this reason they often dominate in initial exploration, especially in frontier settings. They tend to respond quickly to the current demand and change their exploration focus rapidly. For the most part, they operate on the basis of funds raised from individual investors and equity finance, often in provincial stock markets such as those in Canada and Australia, making their expenditure highly volatile.

*Oil service companies* are usually confined to the provision of services and supplies to the operating companies that manage exploration and production on behalf of their consortium partners. Drilling wells and oilfield management are frequently out-sourced by operators to specialized service providers. The larger service companies, like Halliburton or Schlumberger, are capable of becoming involved in pre-exploration, exploration and production, but may take a business view that to do so would pit them competitively against their oil company clients, and refrain from such activities.

Within the industry **three** segments are commonly distinguished: 'upstream', meaning the exploration, development and production activities; 'midstream', meaning the storage, trading and transportation of crude oil and natural gas, and 'downstream' meaning refining and marketing. Some companies, such as ExxonMobil, Shell, and BP, perform activities in each of these segments. However, many of the thousands of firms in the oil and gas industry are specialists or niche players, while others carry out different activities that fall within one or more of the above segments. In the Value Chain that is used in the *Source Book*, the upstream activities fall within the first and fifth chevrons, while some of the activities in the midstream and downstream segments are treated in the second chevron, Sector Organization. The market for crude oil is shaped by many players: refiners, speculators, commodities exchanges, shipping companies, international oil companies, national oil companies, independent companies and the Organization of Petroleum Exporting Countries (OPEC). For the most part, the *Source Book* focus is on the upstream activities.

**Gas** Natural gas is commonly found in association with oil. The techniques for discovery are the same. Hence, the larger oil companies are often also among the largest producers of natural gas. Some companies have started out, however, as gas companies and moved into oil: Encana (Canada); ENI (Italy); BG (UK) and ELF (France) are examples. Gas is very much like oil in the upstream segment, and very different from it in the midstream segment. Even so, there are important and distinct characteristics of gas within the upstream segment which differ from those of oil: in particular, gas processing and natural gas liquefaction (LNG). In the midstream segment, transportation of natural gas is more complex and much more challenging than crude

oil, albeit with fewer environmental risks: constructing and operating pipelines to bring natural gas from remote locations to markets gives rise to complex issues of cross-border regulation (**Chapters 5 and 6**). However, transportation of gas has become significantly easier over the past decade with the expansion of the LNG industry, dominated by the largest, international oil companies, offering significant opportunities to countries along the coast of Africa and the Aceh province of Indonesia, where large gas deposits have been found far from the main consumer markets. In turn, however, this has infrastructure implications for emerging gas producers that the *Source Book* takes note of (**Chapters 5, 6 and 9**).

### 3.3.2 Mining

*Large, international*, multi-product mining companies are relatively few in number, and have become more concentrated than ever in recent years. They comprise Anglo American, BHP Billiton, Rio Tinto, and Glencore. They are involved in every stage of the industry value chain and typically have an interest in several types of minerals. The rationale behind this diversification in the minerals sector is to spread the risk of their activities and achieve a higher average rate of return than would be achieved with a single product such as gold, coal or iron ore. Looking at the largest companies more closely, many are much less diversified than at first appears. Of the top 15 companies, six are more than 50 percent iron ore producers, four are copper producers and three are gold producers<sup>11</sup>. For the most part, then, they are dependent upon one metal for more than 50 percent of their production. These companies tend to be diligent in their approach to environmental and social performance standards and social investments. They commonly adhere to international standards and reporting requirements, through for example ICMM's Sustainable Development Principles, and the IFC's performance standards.

*National Resource Companies* are fewer in number and much less influential in mining than their counterparts in hydrocarbons. Typically, they focus on a limited number of minerals and sell them on the international market. Early efforts at state ownership and control included significant failures in Africa such as the nationalization of copper mines in Zambia, and the various state companies established in centrally planned economies, largely in East Europe and parts of Asia where, for a long time, it was associated with a heavy industry development model. The former was part of a wave of nationalizations of foreign mining companies in developing countries in the late 1960s and early 1970s. During the 1960s there were 32

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<sup>11</sup> Ericsson, M., *Mining Industry Corporate Actors Analysis* (2012), p. 8.

expropriations of foreign mining companies and during the period 1970-1976 the number reached 48<sup>12</sup>. Governments retreated from state control in the 1990s but it remains high in many metals, partly due to the growth of state-controlled mining in China. In the diamond industry there are examples of successful state holdings in Botswana and Namibia, where both countries have formed joint venture companies with De Beers<sup>13</sup>. In copper, there is the example of Codelco, the Chilean producer. In iron ore, there is the Indian mining company, National Mineral Development Corporation.

*Junior* mining companies are typically medium or smaller sized companies focused on exploration activities in one country or region or a specific mineral or group of minerals, and may be owned by domestic entrepreneurs or international firms, sometimes backed by venture capital<sup>14</sup>. There are hundreds of such companies. Indeed, many mineral-rich countries have a group of such companies of differing sizes, sometimes operating only one mine each. Examples of this are Chile, Peru and Mexico. They will usually have local ownership and staffing. Such companies can accept higher risk than the larger ones, both in terms of the type of mineral target sought and the countries in which they explore. They also “tend to seek the products that are presently fashionable, and they can and do change their exploration focus quickly”<sup>15</sup>. *For exploration companies that focus solely on exploration, they are likely to recoup their capital not by developing the reserves themselves (by which stage their interests are likely to be diluted significantly), but by selling on most, if not all, of their discoveries to larger companies with the technical, financial and marketing skills and access to the capital markets for the necessary funds.* Sometimes the larger companies provide the junior ones with the necessary capital to support their operations and an assurance of a market for their discoveries if successful.

*Small-scale* miners and artisanal workers play a key role in mining which has no parallel in the hydrocarbons sector. Their work may take on a corporate character, with workers employed to mine, but this is generally on a very small scale. The sub-sector is the equivalent of subsistence agriculture and is labour intensive, employing on a conservative estimate as many as 30 million people around the world, always operating informally but sometimes also illegally<sup>16</sup>. These companies and workers usually account for minor shares of global mining production. They

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<sup>12</sup> UNCTAD, *World Investment Report*, New York and Geneva 2007, p. 108.

<sup>13</sup> Raw Materials Group, *Overview of State Ownership in the Global Minerals Industry*, World Bank; Washington D.C. (2011), p. 10.

<sup>14</sup> In some classifications the medium and junior companies are separated out into two categories: for example, in the Oxford Policy Management study (2013), *Extractive Industries, Development and the Role of Donors*, p.13.

<sup>15</sup> P Crowson, ‘Mining Unearthed’ (2008), Aspermount, UK, p.118.

<sup>16</sup> This includes a significant number of child laborers, In 2011 Human Rights Watch estimated that the number of child laborers in artisanal gold mining in a single African country, Mali, numbered between 20,000 and 40,000, with many of them starting work as young as six years old: *A Poisonous Mix: Child Labor, Mercury and Artisanal Gold Mining in Mali*, Human Rights Watch, USA.



tend to concentrate on high unit value products, such as gold and gemstones, and are widely found in developing countries. Health and safety conditions among such miners are often poor; they exhibit a high degree of employment of women and children and they often cause significant environmental damage. The benefits to a host country of such mining are unlikely to be reflected in any tax returns and mining codes and tax systems are usually not responsive to this kind of activity. This sector is on the increase with impacts on the sensitive or protected ecosystems and biodiversity and encroachment on World Heritage Sites (although large scale mining also can have such impacts). It is relatively insulated from the rise and fall of commodity prices (in contrast to large-scale mining operations) because the economic returns will remain - even in a downturn in prices - significantly higher than similar artisanal activities, such as fisheries and agriculture. A 'rush' of activity can have sudden, dramatic impacts: in Madagascar, gemstone rushes have attracted as many as 100,000 miners congregating in limited areas with slash-and-burn agriculture used in support of the Artisanal and Small-scale Mining (ASM) communities.

**Diversification** In the 1970s and 1980s, a number of very large oil companies such as Exxon and Shell moved into the mining sector to create genuinely EI companies. They assumed that the prospects for long-term growth within the oil industry were being challenged by the spread of state ownership and NOCs, and had the cash available from high oil prices to fund programs of diversification. Mining and petroleum were, they thought, so similar in their characteristics and basic requirements that it would be possible to operate profitably across both sectors. This proved an economically unsuccessful series of experiments, underlining differences in the respective businesses, and they were soon brought to an end.

### 3.3.3 Unconventional Oil and Gas

The leading companies in the development of shale gas and oil include super-majors like Shell, Total and ExxonMobil, large international energy companies like Anadarko, Pioneer, Encana, Talisman and BHP Billiton, and smaller independent companies that specialize in shale gas (Cuadrilla in the UK is an example). Most of these operate in the United States and Canada, since markets for unconventional oil and gas outside of North America are still in their infancy.