

## **PART TWO**

# **TRANSNATIONAL CORPORATIONS, EXTRACTIVE INDUSTRIES AND DEVELOPMENT**



## INTRODUCTION

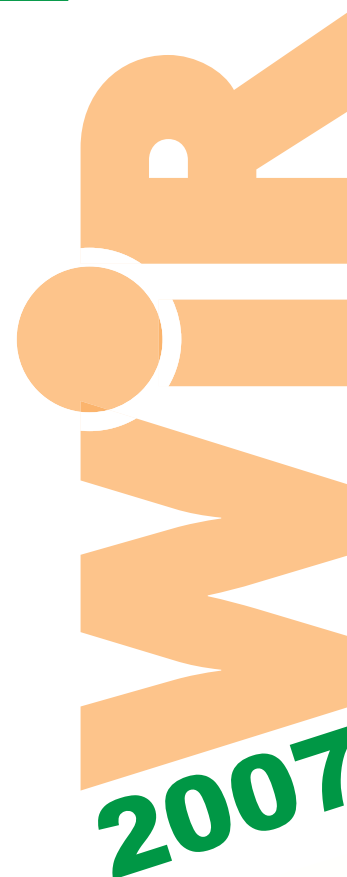
During much of the past two decades, transnational corporations (TNC) in extractive industries have attracted limited attention in analyses and in policy debates on issues relating to development. To some extent, this reflected the declining importance of those industries in the world economy and their shrinking share in global FDI, as well as the increasing emphasis placed on industrialization as a key aspect of the development process. However, the recent and significant revival of commodity prices has led to renewed interest in the exploitation of natural resources and in energy security. Following an extended period of low levels of international investment in extractive industries, significant changes are sweeping the landscape of FDI and TNC activity in these industries. It is therefore an opportune time to take a fresh look at this area, its implications for host-country development, and related policy challenges. Part Two of *WIR07* is devoted to this topic.

The renewed interest in the extractive industries partly reflects the structural shift that is occurring in the relative importance of various markets in the world economy. Rising demand for mineral resources from fast-growing markets in Asia has added to the persistent high levels of demand in developed countries, leading to a surge in mineral prices. In 2006, the price of crude oil reaches a level 10 times higher than its lowest point in 1998. Price increases have also occurred in metals such as aluminium, copper, nickel and zinc, and by June 2007 they were far higher than the levels prevailing in 2003. As a result, corporate profits in the extractive industries have soared and international investments have rebounded.

The boom in mineral prices has brought development issues related to the extraction of natural resources back into focus. The appropriate use of revenues from their exports could enable a number of mineral-rich developing countries to accelerate their development process. At the present juncture, given the shared objective of countries to accelerate the progress towards meeting the Millennium Development Goals set forth by the United Nations, it is timely to consider – once again and with the benefit of experience – how resource endowments can promote development.

Such an assessment needs to take into account the potential implications of involving TNCs in the process. During the past decade, TNC investments in the extractive industries have evolved in several respects, with a change in the distribution of such TNCs among home and host economies. New TNCs have surfaced in traditional as well as emerging market economies. A number of importing countries, anxious to secure continued access to mineral supplies, are encouraging their firms to invest abroad in extractive industries. Today, companies headquartered in developing and transition economies account for a noticeable share of TNC investments, including in the extractive industries (*WIR06*). In some of these, notably oil and gas, privately owned TNCs are now competing directly in overseas markets with State-owned companies from the South.

Mineral-rich developing countries see new economic opportunities and development prospects stemming from higher export revenues, but they are also increasingly aware of the potential adverse effects associated with resource extraction. Countries that allow foreign investment



in their extractive industries are seeking to strike the right bargain with the companies involved. This is particularly true for many of the world's poorest economies, for which oil, gas and various metals are by far the largest sources of export and government revenues.

The relationship between TNCs in extractive industries and host States is constantly evolving as countries seek ways of exercising control over their resources and maximizing retained gains, while at the same time drawing on the strengths of the TNCs. In the present decade, the bargaining power of mineral-exporting countries vis-à-vis mining TNCs is growing as a result of the higher mineral prices. Reflecting their improved negotiating position, several governments have recently changed their policies with respect to TNC participation with the aim of increasing their share of the windfall revenues created. At the same time, more and more countries are paying attention to the broader effects of resource extraction, including on the environment, human rights and other social dimensions, with a view to taking the necessary steps for promoting sustainable development.

Although investments in extractive industries account for a small share of global FDI flows, they constitute the bulk of the flows to many low-income economies, particularly in Africa. However, only a few African recipients of significant amounts of such FDI have been able to transform it into broader development gains; instead most of them score low by various measures of development. For example, Angola, Equatorial Guinea, Nigeria and Sudan were among the top five sub-Saharan African host countries of inward FDI stock in 2005 (annex table B.2). They were also the top four sub-Saharan oil exporters. In terms of development, however, their performance has been disappointing. Their rankings out of 171 economies listed according to the Human Development Index of the United Nations Development Programme were: Equatorial Guinea - 121; Sudan - 141; Nigeria - 158; and Angola - 160 (UNDP, 2006).

Owing to the varying experiences of host countries and the failure of many of them to utilize the gains from TNC participation in export-oriented resource extraction for the purpose of accelerating their development, it is necessary to reconsider how foreign investment in the extractive industries can serve as an impetus to development. There are concerns that TNC involvement may not only fail to generate significant economic gains

for a host country, but may also have adverse environmental or social effects. On the other hand, many developing countries may not be able to fully exploit their resources without TNCs. The question is what various stakeholders – host countries, home countries, investors, the international community and civil society – can do to facilitate a development-friendly outcome. A range of international initiatives of relevance to the TNC-extractive industries-development nexus have been set in motion in the past decade. Some of them have been initiated by governments, and others by civil society and industry associations.

*WIR07* examines the evolving role of TNCs in extractive industries, and revisits the issue of how investment and other relevant policies in this area may bring about greater development gains. The coverage is limited to minerals, more specifically oil, gas, diamonds and metallic minerals, which account for the bulk of FDI in the primary sector.<sup>1</sup> Chapter III defines the scope of the industries and activities covered, and discusses the recent commodity price boom, with particular attention to the interface between extractive industries and development. Chapter IV examines the trends and developments with respect to FDI and other forms of TNC involvement in extractive industries globally. It provides detailed information on the presence of the leading TNCs in key mineral-exporting countries, based on unique sets of data, with a focus on recent developments. It also discusses the main drivers and determinants of foreign investment in extractive industries, noting that these vary between different groups of TNCs. Chapter V analyses the economic, environmental and social impacts of TNC involvement in extractive industries on host countries. The concluding chapter (chapter VI) is devoted to the policy challenge. While recognizing that governments have the primary responsibility for ensuring that TNC involvement in mineral extraction translates into tangible development benefits – particularly in host countries – it explores the options available to various relevant stakeholders for contributing towards the achievement of that goal.

## Note

<sup>1</sup> Agriculture, forestry and fisheries, which are also part of the primary sector, account for less than 1% of all primary-sector FDI from the EU and the United States, the main sources of such FDI.

# CHAPTER III

## FEATURES OF THE EXTRACTIVE INDUSTRIES

Access to a variety of minerals is important for all economies, not least for those that are at an early stage of development. The current commodity price boom has generated renewed interest in the links between extractive industries and development. The intertwining roles of markets, enterprises and States in the extractive industries vary with the specific nature of those industries. Global markets for mineral resources tend to be highly volatile, partly due to the often significant time lags in the supply response to changes in demand. Investments in the extractive industries are generally associated with high capital intensity and high risk, and are strongly influenced by political decisions, which in turn are considerably affected by swings in the market. When prices are high, governments have a strong bargaining position vis-à-vis the investors and vice versa. At the same time, there is a significant positive correlation between high prices and global investments in exploration.

For resource-rich countries, the price boom that started in 2004 has generated new development opportunities. However, the relationship between exploitation of mineral resources and the development performance of the exporting countries has varied considerably. Countries have to face several challenges beyond the economic concerns, extending to environmental, social and political dimensions. Such concerns vary, depending on the mineral resources and the countries. Many related challenges are linked to the specific features of the industry itself, independently of TNC involvement.

This chapter sets the stage for the analyses that follow in subsequent chapters of the role and impact of TNCs in extractive industries. Section A examines the evolving role of minerals in the world

economy and defines the scope of analysis by identifying the main minerals on which this Report focuses. It points out that the centre of gravity of supply and demand for many minerals has gradually shifted towards developing countries. Section B considers the functioning of mineral markets, highlighting the special characteristics of the most recent commodity price boom and its implications for global investment activities in the extractive industries. Section C outlines some of the main characteristics of investment in these activities and discusses the development opportunities and challenges facing resource-rich countries in the current era.

### A. Extractive industries in the world economy

#### 1. Minerals are essential for all economies

Minerals account for a small share of world production and trade.<sup>1</sup> Nonetheless, their supply is essential for the sustainable development of a modern economy. They are basic, essential and strategic raw materials for the production of a wide range of industrial and consumer goods, military equipment, infrastructure, inputs for improving soil productivity, and also for transportation, energy, communications and countless other services (Highley, et al., 2004). No modern economy can function without adequate, affordable and secure access to raw materials. This is easily taken for granted in “normal times”. However, when supply is disrupted or prices rise, affected countries are quick to react. Recent events in disrupted gas deliveries between



### Box III.1. Definitions of extractive industries and minerals

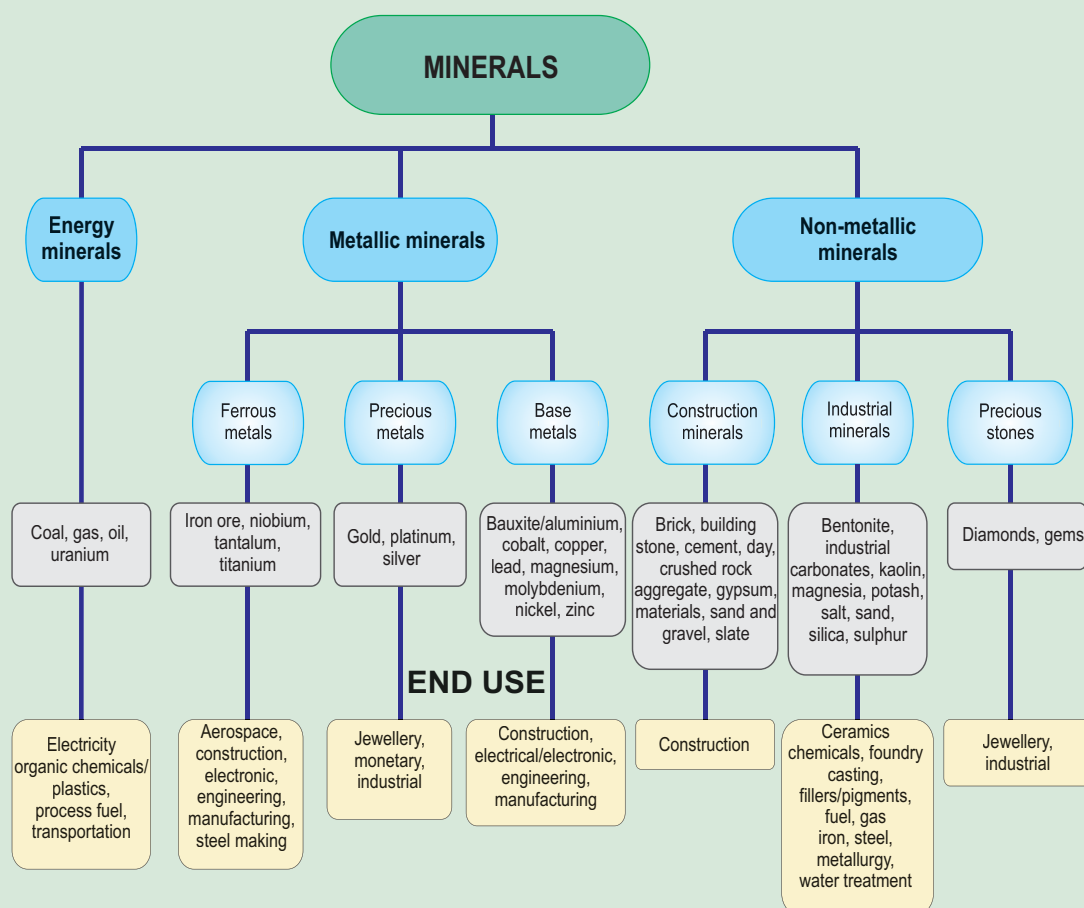
Extractive industries are defined in the *WIR07* as primary activities involved in the extraction of non-renewable resources.<sup>a</sup> Thus they do not include such industries as agriculture, forestry and fisheries. The report also employs an economic definition of minerals.<sup>b</sup> Economic minerals are those that can be marketed for productive purposes. They can be classified into three main categories (box figure III.1):

- o Energy minerals (oil, gas, coal and uranium),
- o Metallic minerals, and
- o Non-metallic minerals (industrial and construction minerals and precious stones).

An important dimension of economic minerals is the way in which they are traded (IIED, 2002). Globally traded minerals have a high enough value per unit weight to be sold in global markets. They include gold, diamonds, copper and aluminium. Oil and gas also belong to this category. Less globally traded minerals have a sufficiently high value per unit weight to be marketed regionally (some grades of coal, limestone and steel), but seldom globally. Locally traded minerals, mainly sand, gravel and stone, have a very low value per unit of weight.

The present report focuses on the most tradable energy and metallic minerals: oil and gas among the energy minerals; and iron ore (ferrous metals), gold (precious metal), and copper, bauxite/aluminium, zinc and nickel (base metals) among the metallic minerals. Metallic minerals account for about 25% of the total value at the mine stage of global mineral production (excluding oil and gas). Given their importance for selected developing countries and their high tradability, diamonds are also included in the analysis.

Box figure III.1.1. Minerals and their use



Source: UNCTAD.

<sup>a</sup> See [http://glossary.eea.europa.eu/EEAGlossary/E/extractive\\_industr](http://glossary.eea.europa.eu/EEAGlossary/E/extractive_industr). It should be noted that metals are not destructible.

<sup>b</sup> Other definitions of minerals are based on geological, legal or biological-medical considerations.

the Russian Federation and Ukraine as well as concerns over the rising oil and gas prices are vivid illustrations. It is therefore not surprising that energy security has resurfaced to the top of the international political agenda, as witnessed, for example, in the G8-summit in Heiligendamm in June 2007 (G8 Summit, 2007).

This report focuses on extractive industries (box III.1), with special attention to energy minerals, notably oil and gas, and to the following metallic minerals: bauxite/aluminium, copper, iron ore, gold, nickel and zinc, and diamonds. Their selection reflects their importance in global mineral production, the role of TNC involvement in their extraction and their tradability at the global level. Throughout this report, a distinction is made between the oil and gas industry, and the metal mining industry.

These two categories of extractive industries are of quite different magnitude. Global production of crude oil and natural gas amounted to an estimated \$2.3 trillion in 2005.<sup>2</sup> By comparison, global production (at mine site) of metallic minerals was valued at about \$265 billion the same year.<sup>3</sup> Commercially, a few metals dominate the metal mining industry. The three most important ones – iron ore, gold and copper – account for some 50% of the total value of metallic minerals produced, followed by nickel and zinc (which represent only about 8%) (table III.1). Bauxite is low on the list mainly because most of the value added in aluminium is created at the refining (alumina production) and smelting (aluminium production) stages (see below). These six metals are economically the most important. Moreover, in most cases, foreign affiliates play a significant role in their global production, their share being more than 50% in bauxite copper and gold production, 36-37%

**Table III.1. Most important metals in world mining, 2005**

Metal	Share in total value of metallic mineral production <sup>a</sup> (%)	Volume of output (metal content in kilotonnes)	Share of foreign affiliates in world production <sup>b</sup> (%)
Iron ore	21.9	800 000	21
Copper	18.0	16 900	56
Gold	13.5	3	50
Nickel	4.9	1 300	36
Zinc	3.4	10 300	37
Bauxite	1.5	31 000	60
Others	36.8	..	..
All metals	100.0	..	..

Source: UNCTAD, based on data from the Raw Materials Group.

<sup>a</sup> Estimates.

<sup>b</sup> Foreign affiliates are considered to be those with at least 10% foreign ownership.

in zinc and nickel production, and about 20% in iron ore production.

The metallic mineral industry involves five main stages: exploration, development, mining, processing (smelting and refining) and mine closure. The share of the value added at the various stages of extraction depends on the specifics of each process from mine to metal (table III.2). If the smelting and refining steps are complicated and/or very energy-intensive, the costs of these latter stages may be considerable compared to the mining stage, and hence less value is added at the mining stage. For example, in the case of bauxite/aluminium, less than 10% is created at the mining stage. Gold and the platinum group metals represent the other extreme, as the product at the mining stage

**Table III.2. Share of value added at the mining stage of selected metals,<sup>a</sup> 2005/2006 (Per cent)**

Metal	Share of value added at the mining stage
Gold	100
Platinum group metals	100
Tin	83
Copper	77
Lead	77
Nickel	70
Zinc	63
Cobalt	33
Bauxite/aluminium	9

Source: UNCTAD, based on data from the Raw Materials Group.

<sup>a</sup> Estimates.

needs very little further treatment in a specialized refinery. The base metals, copper, lead and zinc are in between, with the product at the mining stage – the concentrate – accounting for most of the value.

In the case of oil and gas, refining applies mainly to oil, but a certain proportion of the natural gas is also used in “gas-to-liquids” plants in which high-quality oil products are produced.

Petroleum refining is the separation and processing of crude oil into three types of products: fuels,<sup>4</sup> finished non-fuel products,<sup>5</sup> and chemical industry feedstocks.<sup>6</sup> The transport part of the value chain is different for oil and gas, respectively. Oil is traded worldwide as it can be easily stored and transported via pipelines, railway, tankers and trucks. Gas, which is more difficult to store and transport, is generally transported between neighbouring countries via pipelines. For long-distance transportation and trade it usually takes the form of liquefied natural gas (LNG). LNG supply involves liquefaction, maritime transportation and re-gasification at the receiving end, where it is connected to the traditional transmission pipelines, storage facilities and distribution networks.<sup>7</sup> The share of LNG in total gas trade, which was 35% in 2005 (BP, 2006), is expected to increase, with total liquefaction capacity worldwide set to double between 2005 and 2010 (IEA, 2006a).



## 2. Geography of production and consumption of selected minerals

The world mineral market is characterized by an uneven geographical concentration of resources, production and consumption. The major producers are mainly from developing and transition economies and are net exporters, while the major consumers are mainly from developed countries and rely heavily on imports. Since the 1990s, some Asian developing countries have significantly increased their consumption of minerals to help fuel their booming economies, and are now among the leading consumers and importers.

Oil and gas reserves are highly concentrated in West Asia: its share in world total proven and probable reserves was 62% for oil and 40% for gas at the end of 2005. However, in terms of oil and gas production, West Asia's share was only 23% in 2005. In contrast, developed countries that only accounted for 6% and 8% of global reserves of oil and gas respectively, had a significant 25% share in global oil and gas production (table III.3). For natural gas, the Russian Federation has the largest reserves (27% of the world total) and the highest production (22% of the world total).<sup>8</sup> The Persian Gulf region, which accounts for only 10% of world gas production,<sup>9</sup> is set to increase this share as trade in LNG expands.

Developed countries and South, East and South-East Asia are two groups of countries for which the share in world consumption is greater than in world production and reserves. The gap is larger for developed countries, but is growing rapidly for Asian countries (table III.3).<sup>10</sup> This explains why exploration activity is highly concentrated in developed countries where around 70% of new fields are drilled. Among developing countries, exploration activities are mostly concentrated in South, East, and South-East Asia (table III.3).

For metallic minerals, the picture varies by commodity. However, with few exceptions, developed countries and developing Asia consume more metals than they produce, while the converse applies to Africa, Latin America and the Caribbean, as well as to South-East Europe and the Commonwealth of Independent States (CIS). It is interesting to

note, however, that the share of developed countries in the consumption of iron ore, copper and zinc fell significantly in 2005 from that of a decade ago. This was compensated by a strong increase in the share of developing Asian countries for these metals. Also worth noting is the strong increase in the participation of developed countries in iron ore production, to the detriment of Latin American countries and economies in transition and of developing Asia in gold, zinc and bauxite production (table III.4).

For many developing countries, minerals are the most important export products. The heavy reliance on minerals is particularly pronounced among oil-producing countries in Africa and West Asia (table III.5). African and Latin American countries are endowed with diverse minerals, ranging from precious minerals to ferrous and industrial minerals. Africa dominates the world's supply of precious metals and stones, such as platinum, diamonds and gold, of which it is the leading producer, while Latin America is the leading producer of such metals as copper and silver (USGS, 2005).

## B. The commodity price boom and its impact on investments

Mineral markets are volatile. The most recent commodity price boom has had a major impact on corporate investment behaviour as well as on government policies. It is therefore important to understand the underlying forces behind the recent

**Table III.3. Reserves, production, consumption, and exploration of oil and natural gas, by region, 1995 and 2005**

(Per cent)

Economy	Oil and gas						Reserves at end 2005 <sup>c</sup>	
	Exploration <sup>a</sup>		Production <sup>b</sup>		Consumption <sup>b</sup>		Oil <sup>b</sup>	Gas <sup>b</sup>
	1995	2005	1995	2005	1995	2005		
	Share in total number		Share in total volume					
Developed countries	67	71	31	25	56	52	6	8
Developing countries	29	23	49	54	29	36	84	59
Africa	4	6	8	10	3	3	10	8
Latin America	7	6	10	11	7	7	10	4
Developing Asia	17	11	31	33	20	26	65	47
West Asia	2	3	21	23	7	9	62	40
South, East and South-East Asia	15	8	10	10	13	17	3	7
South-East Europe and CIS	5	6	19	20	14	12	10	31
Russian Federation	3	3	16	16	9	8	6	27
Total world	100	100	100	100	100	100	100	100

Source: UNCTAD based on data from IHS Energy and BP, 2006.

<sup>a</sup> Shares calculated on the basis of the number of new fields drilled.

<sup>b</sup> Shares calculated on the basis of volume.

<sup>c</sup> The reserves are proven and probable ultimate recoverable reserves, i.e. the volume that it is expected will be recovered from the deposit over its entire production lifetime. Proven and probable implies a confidence level of 50%.



**Table III.4. Production and consumption of selected metallic minerals, 1995 and 2005**  
(Per cent)

Metal	Developed countries		Africa		Latin America and the Caribbean		Developing Asia		South-East Europe and the CIS		All regions	
	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005
Iron ore production	17	29	6	4	31	24	27	29	19	14	100	100
Pig iron production <sup>a</sup>	37	29	2	1	8	5	39	52	14	13	100	100
Copper production	41	43	6	9	19	21	12	6	22	21	100	100
Copper consumption <sup>b</sup>	64	46	1	1	5	6	28	42	2	5	100	100
Gold production	34	28	30	21	12	18	14	23	10	10	100	100
Gold consumption	37	39	3	4	2	2	56	53	2	2	100	100
Nickel production	31	30	6	5	12	17	28	26	23	22	100	100
Nickel consumption	52	50	5	3	10	13	10	12	23	22	100	100
Zinc production	45	36	4	4	23	21	22	32	6	7	100	100
Zinc consumption	57	42	2	2	15	8	19	39	7	9	100	100
Bauxite production	39	36	15	10	28	27	12	19	6	8	100	100
Alumina production <sup>c</sup>	40	48	2	1	28	20	14	19	16	12	100	100

Source: UNCTAD, based on data from the Raw Materials Group, Virtual Metals and Bloomsbury Minerals Economics Limited.

<sup>a</sup> Pig iron production (iron content) is used as a proxy for iron ore consumption.

<sup>b</sup> The first column's data for each region are for 1996.

<sup>c</sup> Aluminium production is used as a proxy for bauxite consumption.

**Table III.5. Developing and transition economies with highest dependency on exports of minerals**  
(Per cent of total exports, 5-year average (2000-2004))

Sorted by fuels <sup>a</sup>			Sorted by non fuel minerals <sup>a</sup>		
Economy	Fuels	Product description	Economy	Ores and metals	Product description
Algeria	97.8	Oil and gas	Guinea <sup>bc</sup>	89.8	Bauxite, alumina, gold and diamonds
Nigeria <sup>b</sup>	97.8	Oil	Botswana <sup>d</sup>	87.2	Diamonds, copper, nickel
Libyan Arab Jamahiriya <sup>e</sup>	96.9	Oil	Suriname <sup>b</sup>	70.0	Alumina (aluminium oxide)
Yemen	93.3	Oil and gas	Zambia <sup>b</sup>	61.5	Copper, cobalt
Kuwait <sup>b</sup>	92.9	Oil	Jamaica	60.8	Alumina, bauxite
Angola <sup>f</sup>	92.2	Oil	Niger <sup>b</sup>	46.1	Uranium and gold
Qatar	89.1	Oil, petrochemicals	Chile	45.0	Copper
Saudi Arabia <sup>b</sup>	88.9	Oil	Mozambique <sup>b</sup>	42.3	Aluminium
Brunei Darussalam <sup>b</sup>	88.3	Oil	Papua New Guinea <sup>b</sup>	38.6	Gold, copper
Azerbaijan	86.6	Oil	Congo Republic <sup>g</sup>	34.0	Various metals
Iran, Islamic Rep. of <sup>b</sup>	86.3	Oil and gas	Ghana <sup>h</sup>	33.3	Gold
Venezuela	83.4	Oil	Cuba	33.2	Nickel
Turkmenistan	81.0	Gas	Peru	32.9	Gold, copper, zinc
Oman	80.6	Oil	Rwanda <sup>bi</sup>	32.2	Various metals
Gabon	79.5	Oil	Uzbekistan	30.3	Gold
Sudan <sup>b</sup>	74.2	Oil	Georgia	24.9	Various metals
Syrian Arab Republic	72.8	Oil	South Africa <sup>c</sup>	21.7	Platinum, gold
Bahrain	70.5	Oil	Bolivia	19.1	Zinc, gold
Trinidad and Tobago <sup>b</sup>	61.3	Oil and gas	Kazakhstan	18.0	Various metals
Kazakhstan	56.1	Oil and gas	Bahrain	16.8	Aluminium

Source: UNCTAD, calculation based on COMTRADE database and other sources.

<sup>a</sup> Fuels include SITC 3. Ores and metals include SITC 27+28+68 and, when relevant, diamond ore has been added.

<sup>b</sup> 2 to 4 year average.

<sup>c</sup> The Economist Intelligence Unit.

<sup>d</sup> Bank of Botswana, Financial Statistics.

<sup>e</sup> Derived from OPEC, Annual Statistical Bulletin.

<sup>f</sup> IMF, Staff Reports.

<sup>g</sup> IMF, Direction of Trade Statistics.

<sup>h</sup> IMF, Ghana statistical annex.

<sup>i</sup> IMF, Direction of Trade Statistics.

surge in commodity prices and to examine recent developments from a historical perspective.

## 1. Booms and busts of mineral prices

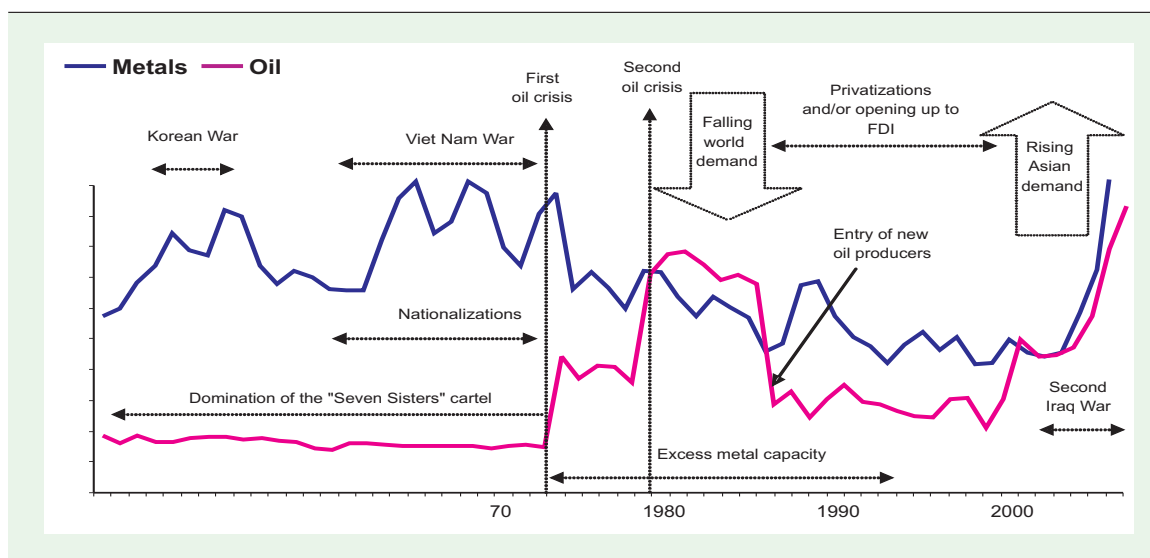
Mineral prices since the Second World War have been very volatile in response to changes in market conditions. 1974 mark the end of the 30-year “golden period” of strong world economic growth, and high demand for minerals that began after the Second World War (figure III.1). During the period 1950–1973, crude oil prices were effectively controlled by the so-called “Seven Sisters” and remained practically constant in real terms.<sup>11</sup> During the same period, metal prices were subject to considerable fluctuations around an upward trend. Positive and increasing long-run growth rates were viewed as a durable feature of mineral markets (Tilton, 1990), and the prevailing preoccupation was the risk of a rapid rise in demand for minerals in developing countries.<sup>12</sup>

From the first oil crisis in 1973–1974 until the early 1980s, oil prices began to climb steeply, largely as a result of increased market control by the Organization of the Petroleum Exporting Countries (OPEC).<sup>13</sup> Metal prices, on the other hand, began a long-term declining trend that reflected several factors, including slower world economic growth, reduced intensity of metal use in many countries (Tilton, 1990), acute competition among producers,

and the build-up of huge excess supply capacity.<sup>14</sup> Crude oil prices also began to decline in real terms in 1985, following the discovery of new reserves in non-OPEC countries such as Angola (now an OPEC member), Mexico, Norway, the then Soviet Union and the United Kingdom. These new sources of supply reduced the market control of OPEC, whose share of world crude production dropped from 53% in 1974 to 30% in 1985 (ECLAC, 2002). The depressed mineral prices of the 1980s and 1990s had important consequences: instead of being regarded as strategically important to economic development, oil and metals were increasingly treated as simple commodities. This “commoditization” of both oil and metals influenced governments’ policy orientations, and contributed to a trend of privatizations, deregulation and increased openness to FDI in several developing and transition economies, especially in metal mining (see chapters IV and VI).

It is only in recent years that the gradual decline in mineral prices has been reversed. For oil, the turning point came in 1999, when prices increased as a result of an agreement signed in 1998 between the OPEC and non-OPEC producers – Mexico, Norway, Oman and the Russian Federation – to reduce supply.<sup>15</sup> From 2003, the geopolitical instabilities in West Asia contributed to a further surge in the price of crude oil (figure III.1).<sup>16</sup> For metals, the long-lasting decline in prices came to an abrupt end in 2004.

Figure III.1. Real price index of crude oil and metallic minerals, 1948-2006  
(Base year 2000 = 100)



Source: UNCTAD and Radetzki, forthcoming.

Note: The metals price index includes the following minerals with their respective weights: copper (38.89%), aluminium (23.93%), iron ore (13.65%), zinc (7.22%), nickel (6.70%), tin (3.62%), phosphate rock (2.67%), lead (2.10%), manganese ore (1.20%), tungsten ore (0.02%). The crude petroleum price index reflects the average of Dubai, United Kingdom Brent and West Texas Intermediate crude prices, with relatively equal consumption of medium, light and heavy crudes worldwide. The deflator used is the unit value index of manufactured goods exports by developed countries.

The price boom took most observers by surprise. It was driven by very strong demand coupled with supply constraints. Unlike earlier boom periods, growth in demand this time came mainly from developing countries. China, in particular, is currently experiencing a resource-intensive growth phase;<sup>17</sup> in addition, the country's economy has been growing more than three times that of the world economy over the past decade (UNCTAD, 2007f). It has therefore become a major engine of world mineral demand growth: in 2005, it accounted for 29%, 66% and 25%, respectively, of the growth of oil, copper and nickel demand, and its share in total world demand for oil, copper and nickel was 8.5%, 22% and 16% respectively (BP, 2006; Goodyear, 2006).<sup>18</sup>

The price rises were also due to slow supply responses. The extended period of low mineral prices had led to reduced investment in human resources, production and refining capacity, resulting in a significant decline in spare supply capacity. Many high-cost production installations were closed in the process.<sup>19</sup> Thus, when demand suddenly surged, there was little idle production capacity left to satisfy the growing consumption.<sup>20</sup> Moreover, shortages and rising costs of inputs caused further delays in the expansion of supply capacity (table III.6). Low levels of stocks, geopolitical instability and

unpredictable events, such as strikes and hurricanes, put additional upward pressure on prices.<sup>21</sup>

## 2. The boom led to rising profits and investments

The recent boom in mineral prices prompted a worldwide investment surge, fed in part by rising profits. Despite cost increases of many inputs, the profitability of mineral producers has risen fast. *Fortune Global 500* companies in extractive industries reached exceptionally high profitability in both 2005 and 2006, compared with large companies in other industries, as well as historically (figure III.2). The net profits of ExxonMobil for 2006 were the highest ever reported by a United States corporation. A study covering some 80% of the world metal mining industry by capitalization found an increase in net profits, from \$4.4 billion in 2002 to \$67 billion in 2006 (PricewaterhouseCoopers, 2007b).

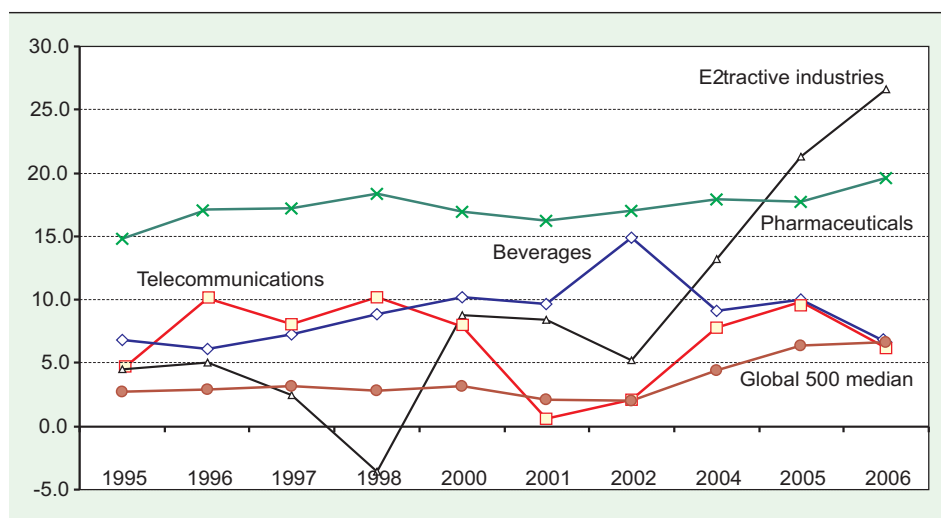
To take advantage of the high commodity prices, firms were eager to expand their production facilities as fast as possible. The intensity of investment and production activity has taken several tracks. As noted above (table III.6), this may have exhausted a number of immediately available key inputs in mineral resource investments.

**Table III.6. Supply delays: selected examples**  
(Month)

Item	Pre-boom lead times (in month)	Lead times, early 2007 (in month)
Grinding mills	20	44
Draglines	18	36
Barges	24	32
Locomotives	12	26
Power generators	12	24
Wagons	12	24
Rope shovels	9	24
Reclaimers	18	24
Tyres	0-6	24
Large haul trucks	0-6	24
Crushers	16	24
Ship loaders	8	22

Source: Rio Tinto, 2007.

**Figure III.2. Profitability of Fortune Global 500 companies in extractive industries and other industries, 1995-2006**  
(Profits in percentage of revenues)



Source: UNCTAD, based on data from the Fortune Global 500 (various years).

Note: Profitability is measured as the ratio of profits to revenues of companies in the Fortune 500 Global, in their respective activity. The common denominator in defining revenues for different industries is income, including sales. Profits are calculated after taxes, and after extraordinary credits or charges that appear in the income statement. For 2006, data for the 1,000 largest corporations in the United States have been used as a proxy.

Oil and gas drilling operations have doubled since 2002, and the number of active rigs has been the highest in 20 years: in mid-2006, the rig utilization rate was estimated at 92%. This intense activity has helped push up costs. For example, drilling day rates have risen by 10–15% per year since 2003 (IEA, 2006b). Companies are scouring the global labour markets for oil and mining engineers, as the dearth of specialized manpower is creating a bottleneck in the execution of investment projects (IMF, 2006).

Supply constraints notwithstanding, the volume of new oil production capacity is expected to grow. According to one study, for the 5-year period 2006–2010, global oil production capacity is projected to increase by 11.7 million barrels per day (mbd), of which no more than 3.8 mbd will be additional oil supplied by the OPEC countries (IEA 2006a). Global demand in the same period is expected to rise by 8.1 mbd, thus relaxing the capacity constraint by 3.6 mbd. Other studies corroborate these findings.<sup>22</sup> However, other observers have warned that supply constraints may result in a further tightening of oil market fundamentals (UBS, 2006; IEA, 2007).<sup>23</sup>

Investments in expansion of capacity are growing in the metallic mineral industries as well. At the downstream level, refined copper capacity is expected to rise substantially faster than demand during the period 2005–2009, and from 2006 increasing surpluses are anticipated in the copper market (CRU, 2006). A similar situation is expected in the case of nickel from 2007 to 2010.<sup>24</sup> In the iron ore market, a turnaround to surplus is expected only in 2009/2010 (UNCTAD, 2007h).

At the upstream level, global private exploration investment in non-ferrous metals rose from \$2 billion in 2002 to more than \$7 billion in 2006, and it is expected to reach \$9 billion in 2007

(figure III.3). Between 2001 and 2005 investment more than doubled in a number of major mineral-rich countries, including Argentina, Canada, Mexico, the Russian Federation, South Africa and the United States (Humphreys, 2005). Among the most important developments in recent years has been the growth of exploration in China, Mongolia and the Russian Federation. Their combined share of global private, non-ferrous exploration expenditures rose from 4% in 2000 to 12% in 2006 (MEG, 2006). However, the level of success in metallic mineral exploration has been low. Indeed, since 1998, only four world class deposits have been discovered by new exploration (figure III.3).<sup>25</sup> While reserves may expand as a result of additional finds in and around already existing mines, it is likely that new metal deposits will be located deeper and in more remote areas, and will be of lower grade. As recently summarized by a mining industry expert (Humphreys, 2006: 5):

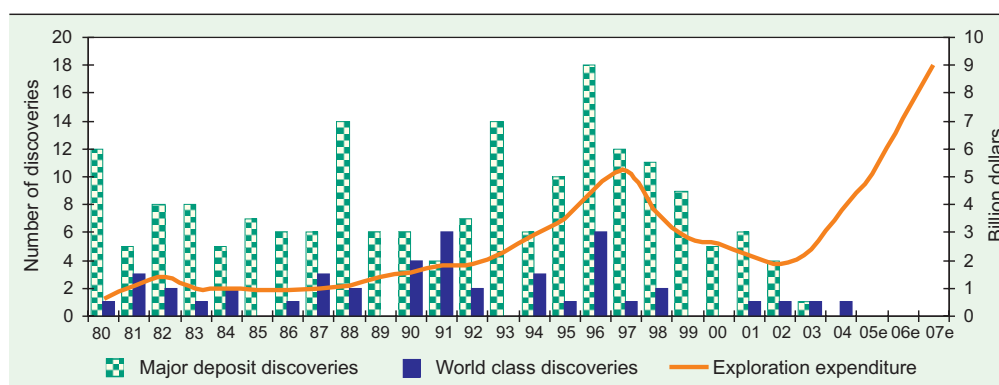
“The cost of finding economic deposits of base metal minerals appears also to be rising... Moreover, the failure of exploration to turn up new monster deposits of the likes of Carajas, Escondida, Grasberg and Norilsk in recent years has resulted in a growing perception that finding and developing very large projects in the future is going to be much more challenging than in the past. Most of the low hanging fruit appears to have gone.”

### 3. Prices likely to remain high for some time

Some factors suggest that the price boom may reflect a “structural” shift. On the demand side, the economic ascendancy of China, India and other developing countries, along with the resource-

**Figure III.3. Number of major discoveries and private non-ferrous mineral exploration expenditure, 1980-2007**

(Billion dollars and number of discoveries)



Source: UNCTAD, based on Mineral Economic Group, 2006; and data provided by the Raw Materials Group and BHP Billiton.  
e Estimates.

intensive stages of their current development phase could well result in a long-running acceleration of commodity demand growth. This can be seen as a new stage in international commodity markets, with prices remaining at unprecedentedly high levels.<sup>26</sup> Another argument suggesting a structural shift is that depleting natural resources are increasing the cost of new output and, in the case of oil, increasing the dependence on the politically unstable West Asian region, with an unavoidable upward price push (see, for example, Deffeyes, 2005; and Laherrere, 2005), at a time of rising demand from large emerging market economies. Increased State involvement in metal mining and oil extraction may result in political factors having a greater influence on production decisions, and it may limit foreign TNCs' access to mineral deposits.

Other experts question the relevance of such observations and tend to play down the threat of depletion, even in the distant future.<sup>27</sup> Some of them have also cautioned that expectations of future global commodity demand growth may be exaggerated.<sup>28</sup> According to one corporate assessment, expanding output in response to higher prices should mean that prices move back towards marginal costs of production (Rio Tinto, 2007). Still, the period over which this can be expected to happen – which varies from commodity to commodity – is likely to be longer in this current cycle than ever before.<sup>29</sup>

In conclusion, there are contradictory perspectives regarding the evolution of mineral prices. In the short term, although global economic growth may have peaked in 2004 and, in particular, the United States economic expansion slackened during 2006, there are no indications of an impending worldwide recession. On the supply side, the extended gestation period of mining projects due to the shortage and rising costs of inputs may

well delay the build-up of a sizeable inventory that could relax the supply constraints. Nevertheless, in the medium term there is the likelihood that most of the ongoing investments will materialize, and that the investment plans may even expand further, if prices remain for some time at the elevated levels of 2006. Thus, unless global economic growth slows down, prices may continue to remain relatively high until there is overcapacity in the oil, gas and mineral industries. This may not happen until the beginning of the next decade.<sup>30</sup> In the longer term, price behaviour will depend upon the demand and depletion rates as well as on new discoveries. However, industry experts seem to be certain that future deposits will be more expensive to develop, which should keep prices relatively high.

## C. Extractive industries: opportunities and challenges for development

### 1. Characteristics of investments in extractive industries

Investments in extractive industries have particular features, relevant for their development impact. The extraction of mineral resources is largely dominated by large-scale, capital-intensive investments, although artisanal and small-scale mining can be important in some countries and for some specific minerals (box III.2). Some projects are technologically challenging, and investments in them are characterized by a high degree of uncertainty and long gestation periods. In most developing countries – except for China and India

#### Box. III.2. Artisanal mining

There are an undefined number of small- and medium-scale non-fuel mining enterprises all over the world producing mainly gold, but also precious stones, iron ore and other minerals. They include artisanal and small-scale miners such as the Brazilian garimpeiros (illegal gold miners), the West African orpailleurs (artisans that extract gold, mainly by washing alluvia) and the Chinese backyard iron ore mines set up during Mao's "Great Leap" campaign, many of which are still operating. In 2005-2006 alone, several thousand iron ore mines were opened in China and India. Box table III.2.1 provides estimates of gold production by artisanal miners for selected countries in Africa and Latin America.

Source: UNCTAD.

Box table III.2.1. Artisanal gold production,<sup>a</sup> 2005  
(Tons)

Country	Artisanal production	Total production
Argentina	0.2	27
Bolivia	3.5	9
Brazil	6.1	35
Colombia	21.6	37
Dem. Rep. of the Congo	2.0	5
Ecuador	3.0	4
Ghana	6.9	65
Kyrgyzstan	1.4	17
Mali	1.8	46
Mexico	7.4	32
Niger	0.5	4
Papua New Guinea	3.2	69
Philippines	1.2	6
United Rep. of Tanzania	5.0	49

Source: UNCTAD, based on data from the Raw Materials Group.

<sup>a</sup> Estimates.



where production is consumed or used domestically – mineral extraction is primarily an export-oriented activity, with significant scope for revenue creation, but limited opportunities for employment creation and local linkages. In addition, mineral extraction poses considerable threats to the local environment and may have adverse social implications. Finally, mineral resources are non-renewable and often of strategic, geopolitical importance. As a result, the level of State involvement tends to be high, especially in the case of oil and gas (see chapter IV).

Mineral extraction is capital-intensive. Building a large base-metals mine can cost over a billion dollars. The magnitude of investments in the oil and gas industry is even greater. Constructing a pipeline, developing an oil deposit or revitalizing an ailing, underinvested mineral industry can run into many billions of dollars.<sup>31</sup> Such kinds of investments in developing countries generally require the involvement of a State-owned enterprise (SOE) that can rely on the financial support of the government, or of TNCs. Not all developing countries, especially among the least developed countries (LDCs), have – or can obtain – the financial resources needed for such investments, either from national SOEs or from national private firms, and have resorted to attracting investments from TNCs. One alternative to TNCs for capital may be to borrow from a lender prepared to accept the high-risk entailed in such investment (e.g. national or regional development banks or the World Bank).<sup>32</sup>

Some projects are more technologically challenging than others. In metal mining, most technology can be acquired in the market, and there are generally few differences in the approaches taken by different mining companies. The challenge is in this case related more to the management of projects with long gestation periods, and the need to give due attention to their environmental and social impacts. In oil and gas extraction, the level of technological complexity is particularly high for offshore, deep-sea extraction, whereas onshore extraction is less technologically challenging.

Special consideration should be given to the long gestation periods often involved in extractive projects. The exploration phase may take up to 10 years, and in many cases such investments eventually turn out to be unsuccessful.<sup>33</sup> On average, the costs associated with failure reduce the expected economic returns of exploration. For the exploration projects that result in discoveries, the potential rewards can, however, be considerable (Land, 2007; Goodyear, 2006).

Even if the exploration is successful and a new mine is developed and brought into production, the investor still faces various technical risks,<sup>34</sup>

market risks (related to demand and price forecasts), political risks (e.g. changes in mining laws, nationalizations), and social and environmental risks. In developed countries, it has become increasingly difficult for mining companies to gain legal access to land and maintain that access (Otto, 2006). If undertaken in countries with a weak institutional framework, the political, social and environmental risks can be very costly in terms of delays, negative publicity, risks of losing their operating licence and significant unforeseen expenditures.<sup>35</sup> Indeed, effective management of the social, environmental and other risks is likely to become a source of competitive advantage for firms (Howard, 2006).

When prices are high, companies have a higher propensity for risk. “Certain countries such as Peru, Russia and China, which are generally considered higher risk, are receiving a greater proportion of exploration dollars because of their mineral prospectivity. Companies are willing to accept that risk in the search for reserves, particularly in the current environment of high commodity prices.” (PricewaterhouseCoopers, 2006: 23). In periods of low prices, the profitability of resource extraction projects tends to decline, reducing the bargaining position of a country to attract investment. However, once the investment is made and the mines or wells are successfully working, the high fixed costs, which gave the foreign company bargaining strength at the beginning of the investment, can become a source of vulnerability. If stricter conditions are imposed, for example, the company may have little choice but to accept them, because it cannot easily withdraw.

Another characteristic of extractive industries is the potential for sizeable mineral rents. Metallic mineral and hydrocarbon deposits are heterogeneous, characterized by large differences in production costs depending on their quality and accessibility. The rent is generally higher for oil and gas extraction, partly because OPEC keeps oil prices above the cost of the least productive field. A huge Saudi Arabian oilfield is capable of generating significant volumes of crude oil over a sustained period under its own pressure, resulting in very low extraction costs per barrel of oil. The same barrel of oil is recovered from a deep offshore field at a much higher cost.<sup>36</sup> In the metal mining sector, mineral grade variation, coupled with mineralogical conditions, can also be significant (Land, 2007).<sup>37</sup>

Finally, minerals are often perceived as being of strategic importance both by producer and consumer countries. First, minerals may be strategic for military, industrial or essential civilian needs. Secondly, specifically from a producer point of view, their non-renewable character gives them a



strategic dimension. Energy minerals (especially oil and gas) are geographically more concentrated (table III.3), and thus strategically important in terms of energy security. This dimension partly explains the significant role of SOEs in the oil and gas industry (chapter IV).

## 2. Public policy concerns of mineral-rich countries

Mineral wealth can be a source of income and prosperity and an opportunity for economic development. However, resource abundance does not automatically translate into economic prosperity, and exploitation of non-renewable resources poses serious challenges to long-term sustainable development prospects. As defined by the World Commission on Environment and Development of the United Nations, sustainable development means “development that meets the needs of the present without compromising the ability of the future generations to meet their needs” (United Nations, 1987). Economic and social development, and environmental protection are seen as the three “interdependent and mutually reinforcing pillars” of sustainable development (United Nations, 2005a). Mineral extraction activities can have significant implications for all three pillars.

Although all human activities should, ideally, meet the criteria of sustainable development, this concept is particularly applicable to extractive activities because they concern intensively consumed, non-renewable resources, and their overexploitation can compromise their possible use – or the use of the revenues generated – by future generations.

This section focuses on development opportunities and challenges that mineral wealth represents for resource-rich countries, regardless of which economic agent is exploiting it. Therefore it does not address the specific impacts on host countries of TNCs’ involvement in the extractive industry – an issue that is examined more closely in chapter V.

### a. Mineral endowments represent development opportunities

Successful mineral-based development, as in developed countries such as Australia, Canada, New Zealand, Norway, Sweden and the United States, has not been merely a matter of geological endowments; rather, it has resulted from the existence and continuous development of human resources and skills, learning and innovation around the extractive activities (Ramos, 1998). For example, natural

resource abundance in the United States was more an endogenous, “socially constructed” condition, than a natural endowment alone (David and Wright, 1997). Better scientific understanding and engineering knowledge can contribute to increasing the amount of proved reserves, improve extraction and refining technologies, and widen the scope of end-use and commercial utilization.

A number of today’s upper-middle and high-income developing countries (e.g. Botswana, Chile, Indonesia, Kuwait, Malaysia, Saudi Arabia, South Africa, the United Arab Emirates and Venezuela) have managed, in varying degrees, to take advantage of their natural wealth in order to advance at least certain aspects of development (such as increasing per capita income, reducing poverty, and, in some cases, achieving economic diversification).<sup>38</sup> For many other resource-rich developing countries, the impact of mineral wealth on development has been disappointing. Many low-income countries heavily dependent on exporting natural resources “have performed poorly on various measures of economic, social and political development” (Pegg, 2006: 1). This phenomenon is regularly referred to as the “resource curse” (box III.3).

However, the development experience of mineral-rich developed countries is hardly reproducible in the present global context, and resource-rich developing countries may have to find original ways to leverage their natural resources for sustainable development. Developed countries used most of their mineral extraction locally, and local processing as well as inputs were protected by high transportation costs. Today, with relatively low transportation costs and globalized markets, it is more difficult to compete with imported products. Moreover, the intensive exploitation of mineral resources in developing countries has taken place at an earlier stage of their development, to respond to the needs of external, rather than domestic, users. It has thus preceded the development of national human resource capabilities that could help build an integrated mineral activity and create endogenous learning and innovation around it.

This new global context may limit the relative capacity for mineral-rich countries to benefit from their mineral endowments. Therefore they need to devise an overall development strategy for leveraging their non-renewable mineral wealth, not only to improve their present situation but also to ensure sustainable development for the benefit of future generations. In this regard, one important objective should be to build a diversified economy through investment in human capital, infrastructure and productive capacity.

### Box III.3. The “resource curse” debate

There is a large body of theoretical and empirical literature that has addressed the role of mineral resources in economic development. Some experts cite evidence to suggest that countries that are rich in minerals have been worse off than less endowed countries in terms of various economic, social and political performance measures. Other experts argue that mineral resources represent a potential source of growth and development if managed well.

In a widely cited study covering a sample of 95 developing countries, a negative relationship was found between natural-resource-based exports (including agricultural products, metallic minerals and energy minerals) and economic growth during the period 1970–1990 (Sachs and Warner, 1997). Other scholars have confirmed that relatively poor per capita growth performance has generally characterized resource-rich developing countries, especially metallic mineral-exporting countries (Auty, 2001a; Mikesell, 1997). Oil exporters have not been immune either to the “resource curse” in terms of low growth (e.g. Gelb, 1988; Shams, 1989; Mikesell, 1997). Many studies also emphasize that countries rich in oil and solid minerals have performed worse in terms of alleviating poverty compared with countries with little or no such mineral wealth (Pedro, 2006).

However, it has also been noted that “there is nothing inherent in resource abundance that condemns countries to either low growth or un-sustainability” (Mikesell, 1997: 191). For example, some studies (Wright and Czelusta, 2003; Davis, 1998; Davis and Tilton, 2002) have questioned the validity of the econometric results and stress that “the reported negative outcomes of mineral economies are case-specific and that economic performance is mixed, heterogeneous and should not be generalized” (Pedro, 2004: 4). Rather than focusing on mineral resources as such, it has been suggested that political underdevelopment may be the root cause of the poor performance of mineral-rich economies (Moore, 2000). Due to weak governance, revenue from mineral extraction has often been wasted, rather than invested in ways that promote sustainable development. Thus governance systems and institutional capacity need to be strengthened, and mineral wealth should be invested in the creation of knowledge for economic innovation, and in human, social and physical capital formation, including infrastructure development. See also chapters V and VI.

Source: UNCTAD.

Mineral wealth represents not only opportunities; it can also, if not adequately managed, hinder development. The ability and capacity of mineral-rich developing countries to address economic, political, social and environmental challenges associated with the extractive industry is a key determinant of their development outcome.

#### **b. The economic challenge**

The economic challenge is threefold: how to create value from the mineral deposits; how to capture that value locally; and how to make the best use of revenues created from the extractive activities.

The first part of the challenge is to organize production in an efficient and sustainable way. This may involve different actors, such as artisanal and small-scale miners (see box III.2), large, private or State-owned, domestic or foreign-owned companies. The relative importance of these different players will vary depending on such factors as the nature of the mineral and the level of domestic capabilities.

The value an economy may seek to capture locally from mineral extraction can be direct, through employment, profits and taxes, as well as indirect, through the purchase of goods and services. Again, the scope for local capture of such value depends on how the extraction activity is organized,

as well as on the nature of the minerals and the level of domestic capabilities. Large-scale mineral extraction is highly capital-intensive in nature, which limits the potential for employment creation. The magnitude of profits depends on such factors as the quality of the mineral deposit, the cost of extracting the minerals, the productivity of the operations and global price developments. The ownership of the production will influence the extent to which profits are distributed between the State and the private sector and within the country or abroad. The amount of government revenue depends also on the design and implementation of the fiscal system.

The scope for local procurement depends primarily on the availability of inputs, but also on the procurement policies of the extraction companies; whereas the scope for local use depends on the existence of national capabilities and competitive advantages in developing downstream manufacturing activities. In developing countries, local sourcing of the highly specialized inputs used in mineral exploration and extraction is generally difficult; often it is only activities such as catering, cleaning and, in some cases, construction services<sup>39</sup> that are sourced locally (Otto, 2006: 119). Moreover, the downstream capacity of many developing countries barely goes beyond refining activities, and in a number of cases does not even get that far. As a result, fiscal income and profits from the mineral

extraction are arguably the most significant value contributions to a local developing economy. Thus, issues related to the ownership, size, distribution and use of revenues are, more than in other industries, the main focus of policy.

The third part of the economic challenge is related to the use of income resulting from mineral extraction, which is of crucial importance from a development perspective. The impact of the income generated will differ depending on its use: that is, whether it is transferred abroad or not, used to service foreign debt, to repatriate profits, for reinvestment, or for importing consumer goods.

There are many risks associated with the use of income from natural resources. First, government revenue from natural resources could lead to a “rentier attitude” that does not promote productive investments in projects conducive to employment creation and economic growth. While some problems may need urgent responses – especially those related to poverty – long-term, durable solutions are important in order to reduce the continued reliance on assistance.

Second, mineral revenue could lead to a shift away from investment in the manufacturing sector, which may cause the sector to shrink and the economy to specialize in the primary sector, a symptom typical of the “Dutch disease”.<sup>40</sup> Yet industrialization is crucial for the development of low-income countries. Indeed, a characteristic feature of a successful development path is the growing importance of the manufacturing sector in the early stages of development (Chenery, et al., 1986). Most technical progress is concentrated in manufacturing (Prebisch, 1981), and it is a sector that enables positive externalities and learning opportunities, which play a key role in long-term economic development (Hirschman, 1958). There is a concern that resource-rich countries specialize in products for which demand increases less rapidly than for manufactured goods, leading to a long-term deterioration in their terms of trade (Prebisch, 1949; Singer, 1949). Accordingly, resource-rich countries need to channel the wealth generated in their primary sector into efforts towards greater economic diversification and the upgrading of their manufacturing activities, especially as mineral price volatility may translate into unpredictable government revenues.

### **c. The environmental, social and political challenges**

More than most other industrial activities, mineral extraction tends to leave a strong environmental footprint. It can have profound environmental impacts near a project site and in

surrounding areas, as well as at the global level. Effects vary between the different types of minerals and the stages in the production chain. In the case of oil and gas, considerable environmental damage can result from leakages and spills, flaring of excess gas and the creation of access routes to new areas, often involving deforestation. Oil spills are massively polluting, reducing fisheries and tourism and harming bird life, not to mention the severe ecological impact on other ocean life.<sup>41</sup> At the global level, a major concern regarding extractive industries in general, but especially energy minerals, is their impact on climate change (Liebenthal et. al., 2005; Sala-i-Martin and Subramanian, 2003).

Many of the environmental problems associated with metal mining stem from the contamination of surface and groundwater from toxic wastes.<sup>42</sup> The issue of access to and quality of water is especially critical when the mining activity takes place in proximity to agricultural or fishing communities (Otto, 2006). Mining may also be associated with deforestation, soil erosion and mine tailings, and, often, firms or government authorities are unwilling or unable to pay for the clean-up costs of closed and abandoned mines.

Extractive activities can also have profound social and political impacts. They can have a positive effect on development by creating jobs, encouraging businesses and providing vital infrastructure for remote communities, such as roads, electricity, education and health. However, they may also generate new social and economic problems related to the involuntary resettlement of populations, loss of traditional livelihoods, health concerns due to the exposure of workers and populations to chemicals and particles, and workers’ safety.<sup>43</sup> As governments obtain sufficient revenues from external sources, they can become less dependent on their inhabitants for revenue, and thus less accountable, transparent and responsive to the societies they govern.<sup>44</sup>

Several studies have furthermore found a strong link between dependence on natural resources and the risk of civil war and other conflicts and their prolongation (e.g. Collier and Hoeffler, 2005; Collier et al., 2003; Ross, 2001; Renner, 2002). Detrimental impacts of natural resource dependence on governance and human rights have been observed, particularly in sub-Saharan Africa. Oil and diamonds in Angola, diamonds in Sierra Leone and Liberia, cobalt and other minerals in the Democratic Republic of the Congo and oil in Sudan have fuelled lengthy civil wars. The instability in West Asia and the Persian Gulf region has been attributed to that region’s oil wealth.<sup>45</sup> The “Carter Doctrine”, which stated that the United States would use military force, if necessary, to defend its national interests in the Persian Gulf region (Carter, 1980),

illustrates that natural resources can also be at the centre of conflicts involving players far beyond the region immediately concerned.

#### **d. The governance challenge**

Whether a country can cope successfully with all these important challenges (economic, environmental, social and political) depends in large part on its governance system. The United Nations has defined governance as “the exercise of economic, political and administrative authority to manage a country’s affairs at all levels”.<sup>46</sup> It defines good governance as:

“Participatory, transparent and accountable. It is also effective and equitable. And it promotes the rule of law. Good governance ensures that political, social and economic priorities are based on broad consensus in society and that the voices of the poorest and the most vulnerable are heard in decision-making over the allocation of development resources.”<sup>47</sup>

Without a well-developed governance-framework, there is an increased risk that benefits from extraction will not materialize, that fiscal systems will lead to uneven sharing of revenues, that lack of a coherent and concerted development strategy will lead to their misuse, that local populations will be left disappointed, and that environmental damage, health risk and conflicts will occur. Thus the quality of institutions prior to the discovery of mineral wealth, and the capacity of a country to regulate, monitor and enforce activities in extractive industries are essential. Resource extraction may not turn well-working

institutions into non-performers, but it may make bad governance worse.

The economic, environmental and social challenges noted above underline the importance of governance in ensuring maximum development gains from resource extraction. But structural, long-term beneficial solutions – such as administrative capacity-building, realignment of existing policies, and human capital accumulation – take time to evolve, and provide few immediate rewards. Thus they have often been skirted. As long as the political will is missing, the challenge of governance cannot be resolved. However, there is an urgent need to continue exploring different ways of addressing it.

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Improvement in the terms of trade resulting from the recent commodity price boom represents development opportunities for mineral exporting countries. There are, however, important challenges in harnessing the earnings from extractive industries to boost development. Most of these derive from the specificities of the extractive industry itself, which generally involves large-scale, capital-intensive projects, with low labour intensity, a high environmental footprint, and weak linkages with the local economy of developing countries. While the responsibility for ensuring development gains from mineral exploitation rests first and foremost with governments, the responsibility of other stakeholders in contributing to the development impacts of the activity should not be ignored. And, as shown in the next chapter, TNCs are key players in this context.



## Notes

- 1 In 2005, minerals accounted for 3% of world GDP and 13% of world trade (UN COMTRADE database, SITC Rev. 1 and UN/DESA Statistics Division).
- 2 Estimated by multiplying global production of oil and gas in 2005, which amounted to 47 billion barrel oil equivalent (data provided to UNCTAD by IHS), by the 2005 Dubai spot crude price (\$49.35/barrel) (<http://www.bp.com/>).
- 3 Data provided to UNCTAD by the Raw Materials Group.
- 4 Motor gasoline, diesel and distillate fuel oil, liquefied petroleum gas, jet fuel, residual fuel oil, kerosene and coke.
- 5 Solvents, lubricating oils, greases, petroleum wax, petroleum jelly, asphalt and coke.
- 6 Naphtha, ethane, propane, butane, ethylene, propylene, butylenes, butadiene, benzene, toluene and xylene.
- 7 LNG can constitute an alternative to pipeline transportation in regional neighbouring countries when the extra costs involved match the costs of pipeline transportation.
- 8 Data on Russian Federation's gas production are from BP, 2006.
- 9 Data on gas production in the Persian Gulf are from BP, 2006.
- 10 For oil, the respective shares in production and consumption are: 19% and 54% for developed countries, and 9% and 22% for South, East and South-East Asian countries. The corresponding figures for gas are: 38% and 47% for developed countries, and 12% and 13% for South, East and South-East Asian countries (UNCTAD, based on BP, 2006).
- 11 The "Seven Sisters" were: Standard Oil of New Jersey (now ExxonMobil), Royal Dutch Shell, Anglo-Persian Oil Company (now BP), Standard Oil of New York (now part of ExxonMobil), Texaco (now Chevron), Standard Oil of California (now Chevron) and Gulf Oil (now part of Chevron, BP and Cumberland Farms).
- 12 This conviction led to concerns clearly reflected in the argument that "if the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached some time within the next 100 years" (Meadows et al., 1972: 23–24).
- 13 OPEC is a permanent, intergovernmental organization, created at the Baghdad Conference on 10–14 September 1960 by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. The five founding members were later joined by nine other members: Qatar (1961), Indonesia (1962), the Socialist People's Libyan Arab Jamahiriya (1962), the United Arab Emirates (1967), Algeria (1969), Nigeria (1971), Ecuador (1973–1992), Gabon (1975–1994) and Angola (2007) (<http://www.opec.org/>). Many similar organizations for other commodities, such as for copper (CIPEC), bauxite (IBA) and iron ore (APEF), were set up during the early 1970s but were not particularly successful.
- 14 Increased competition was the combined result of the emergence of new SOEs in the 1970s, following a wave of nationalizations and the failure of producers in general to anticipate slowdown in the long-run demand growth, which led to excessive investments in new mines and processing facilities and huge surplus production capacity.
- 15 From 2000 to 2003, a combination of quota cuts and growing oil demand pushed prices back into the vicinity of a price band set by OPEC, of \$22–\$28 per barrel.
- 16 Political turmoil in Nigeria and Venezuela, and natural disasters, such as Hurricane Katrina, also contributed to price volatility.
- 17 In 2005, for example, China consumed 2.1 tons of copper and 180 tons of oil per million dollars of GDP. In comparison, the corresponding figures for Japan were 0.3 tons and 50 tons, and for the United States, 0.2 tons and 80 tons (CRU, 2006; IMF, 2006).
- 18 On the importance of the Chinese demand in the recent price boom, see, for example, Cyclope, 2007.
- 19 For oil, for example, this happened especially in the United States and the North Sea, allowing OPEC countries to increase their share in production from 30% in 1985 to 40% in 1999. In addition, low prices were a disincentive for suppliers to maintain spare capacity.
- 20 Global surplus crude oil production was estimated at 1–1.3 million barrels per day (mbd) in August 2006, down from 5.6 mbd in 2002 (IEA, 2006a). Moreover, the worldwide aggregate stock-to-consumption ratio for all base metals was at a record low in the third quarter of 2006 – down to five days' cover (Barclays Capital, 2006).
- 21 For example, at the Minera Escondida in Chile, production (of 1.2 million tonnes of copper concentrates a year) was interrupted for most of July 2006 by labour disputes, resulting in an estimated loss of production of around 45,000 tonnes of copper. Production at Codeco's Chuquicamata mine in Chile (54,000 tonnes of copper concentrates a year) was also disrupted in July 2006 after a rock-slide damaged an ore conveyor belt (Abare, 2006).
- 22 For example, after taking account of reinvestments in existing installations and falling capacity due to field depletion, the net additions in annual capacity from the 100 largest oil projects under development are forecast to average 3% between 2006 and 2008, more than twice the expected demand growth (Goldman Sachs, 2005). See also CERA, 2005; and IHS, 2005.
- 23 Production forecasts are uncertain, however, a study on long-term projections for non-fuel minerals found very large differences between global projections (made more than 25 years ago) of production and consumption for a selected number of non-fuel minerals and the observed results for the year 2000. Projections critically depend on assumptions relating to such factors as population and income growth, technological and regulatory changes, that are difficult to forecast (Sohn, 2005).
- 24 Interview with David Humphreys, chief economist, Norilsk Nickel, September 2006.
- 25 There can be significant lags between the time exploration investments are made and the discovery of a major deposit.
- 26 See, for example, *The Economist*, 16 September 2006.
- 27 For the debate between the pessimists and optimists, see Tilton and Coulter, 2001.
- 28 Some, such as Morgan Stanley's chief economist, Stephen Roach, argue that "commodities are as bubble-prone as any other investment" (*The Telegraph*, 2 October, 2006). Others argue that a significant amount of the impact of demand growth of emerging market economies will be mitigated by weak demand from developed countries, due to the shift of manufacturing from developed to developing countries (Radetzki, forthcoming).
- 29 For example, historically, it has taken more than five years for iron ore prices to return to trend after reaching a peak, while copper and aluminium prices have taken less than three years. Differences arise mainly due to varying market structures of different commodities.
- 30 According to one study, the reversal of the upward price trend is likely to result from an adjustment of Chinese economic growth, which is not expected to take place before 2011 (Cyclope, 2007).
- 31 For example, exploiting oil deposits in the Orinoco Belt in Venezuela cost \$17 billion ("In Venezuela, a face-off over the prospect of oil riches", *International Herald Tribune*, 1 June 2006), and in Azerbaijan, the recently opened Baku-Tbilisi-Ceyhan pipeline cost \$3.9 billion ("Europe: too much of a good thing; Azerbaijan and oil", *The Economist*, 19 August 2006).
- 32 In the case of the World Bank, project financing may be conditional on governmental and institutional reform, such as privatization and liberalization of the investment regime (World Bank, 2005).

- 33 A study of the delay period from discovery to the start of production covering 214 known grassroots gold deposits discovered worldwide in the period 1970–2003 was 6.3 years on average (Schodde, 2004).
- 34 Technical risks include, for example, the actual amount and grades of ore as compared to forecasts, the actual level of operating costs as compared to forecasts, and the adequacy of mining methods and metallurgical process.
- 35 See, for example, Otto, 2006, and <http://www.ifc.org/ifcext/enviro.nsf/Content/RiskManagement>.
- 36 Production costs of a barrel of petroleum were estimated in 2004 to vary between \$1 dollar in the lowest cost zones (West Asia) and \$12–\$15 dollars in the more difficult or mature zones (e.g. Big North offshore, East Siberia, Texas marginal fields) (Chevalier, 2004).
- 37 This also applies to diamonds. Different qualities of stone can be present in a single diamond pipe, with rare finds being thousands of times more valuable than the average carat value of diamond production (Land, 2007).
- 38 See, for example, Stevens, 2002; Sarraf and Jiwanji, 2001; Wright and Czelusta, 2003; and Acemoglu, et al., 2003.
- 39 Construction service costs are important in the development stage of a mining project.
- 40 The term “Dutch disease” originated in the Netherlands during the 1960s, when revenues generated by natural gas discovery led to an appreciation of the national currency and to a sharp decline in the competitiveness of the non-booming tradable sector. The revenue windfall served to increase imports to the detriment of national production, provoking a sharp decline in economic growth. This economic paradox has since been recognized as a situation in which a large inflow of foreign currency – whether it originates from a sharp surge in natural resource prices, or from foreign assistance or foreign investment – adversely affects the performance of the non-booming sectors of an economy, and in particular, the non-booming tradable sector (De Silva, 1994).
- 41 Most spills occur from pipelines and fixed location facilities, usually classified as small spills (less than 7 metric tons), while tankers cause the largest volume of spills (Salim, 2003).
- 42 For example, gold production involves the use of toxic materials such as cyanide, mercury and arsenic, and their inappropriate handling is frequently a source of health and environmental problems (“Why mining is bad for your river”, *World Rivers Review*, Vol. 12, No. 5, October 1997).
- 43 “Although only accounting for 0.4% of the global workforce, mining is responsible for over 3% of fatal accidents at work (about 11,000 per year)” (see ILO website, <http://www.ilo.org/public/english/dialogue/sector/sectors/mining/safety.htm>). Note: these estimates are based on official data that only comprises the formal workforce. Thus, workers in informal mining are not covered.
- 44 Acemoglu et al., 2004; Acemoglu and Robinson, 2006; Keen, 1998; Moore, 2000; Renner, 2002; Tilly, 1975; and Shafer, 1994).
- 45 See, for example, D’Amato, 2001; Pelletiere, 2004 and Klare, 2002, 2004.
- 46 See <http://mirror.undp.org/magnet/policy/chapter1.htm#b>.
- 47 Ibid.



# CHAPTER IV

## TNCs IN EXTRACTIVE INDUSTRIES

TNCs are prominent players in both the metal mining and the oil and gas industries. With new global players emerging, not least from developing and transition economies, the universe of these extractive-industry TNCs is being transformed. It now encompasses both the traditional, privately owned firms, mostly headquartered in developed countries, and a growing number of State-owned firms.<sup>1</sup> The way in which TNCs engage in overseas investments has evolved differently over time in different extractive industries. Drawing on unique sets of data,<sup>2</sup> this chapter starts by examining global FDI trends in these industries and the importance of such investments for individual home and host countries. The chapter then goes on to analyse how the universe of extractive-industry TNCs is evolving (section B). Section C examines the main drivers and determinants of related TNC investment. Section D concludes by summarizing the main findings.

### A. Global trends in FDI and other forms of TNC participation in extractive industries

#### 1. FDI trends

Extractive industries account for a small share of global FDI flows, though this has not always been the case. In the early twentieth century, FDI went mostly into these industries, reflecting the international expansion of firms that originated largely from the colonial powers. The objective of TNCs in the extractive industries was to gain direct control over the mineral resources required as inputs

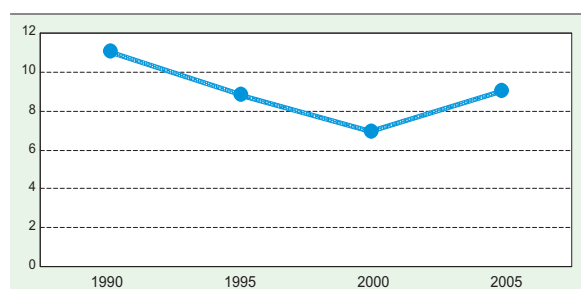
for their growing manufacturing and infrastructure-related industries.<sup>3</sup> During the Great Depression (1929-1933), the international expansion of oil companies continued unabated despite the crisis in other overseas investments (Graham, 1996: 26). As former colonies gained independence after the Second World War, and with the creation of the Organization of the Petroleum Exporting Countries (OPEC), many governments chose to nationalize their extractive industries, resulting in a declining involvement of the TNCs that hitherto had been dominant. For example, by 1970, the share of resource-based industries (by investor industry) in United States outward FDI stock had fallen to less than 40% (from more than half at the beginning of the century) (Graham, 1996: 27).

The share of the extractive industries in global inward FDI stocks declined throughout the 1990s until the start of the current commodity boom in 2003, after which it recovered to about 9% in 2005 (figure IV.1). The decline of the primary sector's share in global FDI has been due to its slower growth compared with FDI in manufacturing and services. In absolute terms, however, FDI in the primary sector has continued to grow: it increased in nominal terms nearly 5 times in the 1970s, 3.5 times in the 1980s, and 4 times from 1990 to 2005 (*WIR03*; *WIR05*; annex table A.I.9). The stock of FDI in extractive industries was estimated at \$755 billion in 2005 (annex table A.I.9).

When analysing FDI data related to extractive industries, a number of limitations should be kept in mind. For example, only 22 countries report data on outward FDI stocks in this area (box IV.1) and some forms of TNC involvement may be poorly covered in official statistics, while cross-border mergers and acquisitions



**Figure IV.1. Share of extractive industries in world inward FDI stock, 1990, 1995, 2000 and 2005 (Per cent)**



Source: UNCTAD estimates, based on annex table A.IV.1 and the FDI/TNC database ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics)).

(M&As) can lead to large FDI flows into countries where owners are based but where very limited extraction takes place (box IV.1). It is therefore important to complement FDI data with other statistical information when analysing the extent and nature of TNC involvement.

Developed countries remain the most important sources of outward FDI in extractive industries, although their share in the world total declined somewhat, from 99% in 1990 to 95% in 2005 (annex tables A.I.10 and A.IV.2). Between 1990 and 2005, the Netherlands, the United Kingdom and the United States remained the three largest home countries of outward FDI stock in these industries.<sup>4</sup>

Recently selected developing and transition economies have become significant sources of outward FDI in extraction industries. For example, in 2003 and 2004, the mining industry accounted for 48% and 33%, respectively, of *China's* FDI outflows; and this share fell to 14% in 2005, they still exceeded \$1 billion in absolute terms.<sup>5</sup> In *India*, oil and gas accounted for an estimated 19% of the total value of overseas acquisitions by its TNCs up to March 2006 (MAPE Advisory Group, 2006). The number of ongoing overseas projects of extractive-industry TNCs from the *Republic of Korea* increased from 141 at the end of 2002 to 218 at the end of 2006, and from \$0.5 billion to \$2.1 billion in value terms, most of which (\$1.9 billion) was accounted for by oil and gas field development (Republic of Korea, 2007).<sup>6</sup>

Owing to the noted lack of comprehensive data on extractive-industry FDI, it is difficult to make comparisons between individual countries and regions. The most complete statistics are provided by the United States, which also distinguishes between different subsectors of the extractive industries. According to these data, FDI in oil and gas is considerably larger than in metal mining. Oil and gas accounted for 71% of United States outward FDI stock in extractive industries in 2005 (and for 84% if FDI in extraction supporting activities is included)

(figure IV.2). Within mining, non-precious metals were the most important target industries for outward FDI from the United States, together accounting for 36% of FDI stocks in such mining.

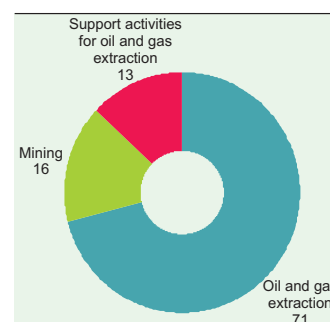
This sectoral distribution is largely confirmed by data on worldwide cross-border M&As. During the period 1990-

2006, oil and gas accounted for almost three quarters of all such deals in extractive industries (annex table A.IV.3). Within the *oil and gas industry*, cross-border M&A purchases have fluctuated significantly (annex table A.IV.3), reaching an all-time high (of more than \$100 billion) in 2005 as a result of the restructuring of Royal Dutch Shell (box IV.1; *WIR06*: 83 and 88). In *mining and quarrying*, cross-border M&A activity has generally been lower, but in 2006, the value of such deals reached a record value of \$55 billion (annex table A.IV.3). Among more than 200 deals recorded in 2006, two were exceptionally large: Companhia Vale do Rio Doce (CVRD, Brazil) acquired Inco (Canada) for about \$17 billion and Xstrata (Switzerland) acquired Falconbridge (Canada) for about the same amount (annex table A.IV.4).<sup>7</sup> Due to the persistently high mineral prices and profitability of the industry (chapter III), the M&A frenzy is expected to continue, as confirmed, for example, by the takeover bid by Rio Tinto (United Kingdom) for Alcan (Canada) in July 2007 (Berman and Glader, 2007).

## 2. Developing and transition economies are receiving a growing share of foreign investment

The geographical distribution of inward FDI in extractive industries has fluctuated over time. In the first part of the twentieth century, developing countries were the major destination of FDI in extractive industries. However, nationalizations from the 1950s to the 1970s<sup>8</sup> triggered a shift towards developed countries (discussed in section B.2), partly due also to discoveries of oil deposits in these countries. Over the long period of low mineral prices, from the 1980s till the early 2000s (chapter III), the mixed (often unsatisfactory) performance of some

**Figure IV.2. United States outward FDI stock in extractive industries, 2005 (Per cent)**



Source: UNCTAD, based on data from United States, Department of Commerce.

Note: The percentages refer to the industry of the outward investor.

### Box IV.1. Complexities of interpreting data on FDI in extractive industries

Difficulties in interpreting data on FDI in the extractive industries arise for four reasons:

- Incomplete reporting (information is available for a limited number of countries, and for varying periods of time);
- Diverging definitions and methodologies used in data collection;
- Imperfect FDI data that fail to capture non-equity-based transactions not registered as FDI flows; and
- Some components of FDI, such as cross-border M&As, may give an inflated picture of real activities.

These four difficulties are interlinked. For instance in 2005, data on FDI in the extractive industries (mining, quarrying and petroleum as defined in the ISIC code) were available for 38–54 economies as inward FDI, but for only 22–29 economies as outward FDI. Even fewer countries break down the extractive industries into oil and gas, on the one hand, and other mining on the other (box table IV.1.1). In addition, data are not available systematically for all years. Another problem is related to differences in the coverage of national data. For example, while the United States explicitly includes “support activities for mining” in its FDI data (that accounts for more than one tenth of its outward FDI stock in this industry), other countries do not show this particular subsector separately. UNCTAD adjusts the United States data by moving this service activity to the services sector. Thus, the data for FDI in the extractive industries should be interpreted with care.

**Box table IV.1.1. Number of countries reporting data on FDI in extractive industries, 2005**

FDI type	Inward FDI		Outward FDI	
	All extractive industries	Of which, oil and gas and other mining are separately available	All extractive industries	Of which, oil and gas and other mining are separately available
Flows	54	17	29	12
Stocks	38	13	22	8

*Source:* UNCTAD, FDI/TNC database ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics)).

*Note:* Data for most countries are not available for all years.

There are established international rules on how FDI, including in extractive industries, should be recorded (IMF, 1993). FDI covers not only affiliates incorporated in a host country but also unincorporated branches. These branches may include both unmovable equipment and objects (such as oil pipelines and structures, except when owned by foreign government entities) and mobile equipment (such as gas and oil drilling rigs). All of these items are considered to be direct investment according to the balance-of-payments methodology, provided they exist for at least one year and that they are accounted for separately by the operator, and so recognized by the tax authorities of a host country (IMF, 1993). However, in practice, individual countries differ in how they interpret and apply these rules in statistical data collection, resulting in uneven reporting, which makes international comparisons difficult.

FDI statistics may fail to capture fully the activities of extractive-industry TNCs in a country, even if they follow the international guidelines on data collection. If a TNC has a concession to extract natural resources, it owns the equipment and installations used in its operations. Hence cross-border flows aimed at financing such capital expenditures should be registered as FDI. On the other hand, in the case of production-sharing agreements, equipment and installations typically are the property of the host country, either at the outset of production or progressively. Where local governments or companies rent such equipment and installations from abroad, rental payments should be recorded under services in the current account, not in the capital account (that includes FDI components) of the balance of payments. Hence the full capital expenditure is not necessarily registered under FDI. Moreover, in the case of a service contract, it is only the establishment of the branch servicing that agreement and its capital expenditures financed by parent firms that are recorded as FDI. The subsequent activities of that branch are then recorded as sales of services, such as providing trained personnel or technical advice to the State-owned local oil company. It is recommended that the data on these activities be collected as part of foreign affiliates' trade in services statistics, which are different from the balance of payments that cover essentially financial transactions between residents and non-residents.

Finally, large cross-border M&As may inflate the FDI inflows of countries whose extractive-industry firms are sold to foreign acquirers in the year for which data were collected, without any major change in exploration and extraction activities. For example, the reorganization of Royal Dutch Shell in 2005 resulted in a \$74 billion merger (annex table A.IV.4), and major FDI inflows to the United Kingdom without expanding extractive activities in that country. Moreover, some extractive-industry TNCs may select a location of convenience for their headquarters different from the country in which the activities are taking place. In those cases, related cross-border M&As are recorded under the FDI inflows from the immediate transaction country.

*Source:* UNCTAD.

State-owned companies (Radetzki, forthcoming) and the need to service foreign debt, led many developing countries to once again allow FDI in metal mining, including through privatizations.<sup>9</sup> However, few developing and transition economies have chosen to privatize their national oil and gas companies, for example, of Argentina, Bolivia and Peru. Others have allowed the participation of TNCs in the exploration and exploitation of oil through a variety of contracts (see below).

Nevertheless, the importance of developing and transition economies as destinations for TNC investments in extractive industries has increased over the past two decades. Between 1990 and 2000, the estimated stock of inward FDI in extractive industries in these countries rose by nine times, and between 2000 and 2005 it increased again by more than 50% (annex table A.IV.1). The share of developed countries fell from 86% in 1990 to 71% in 2005 (annex table A.I.9).<sup>10</sup> The share of developing countries in the United States' outward FDI stock in extractive industries increased from 31% in 1985 to 44% in 2005 (table IV.1). Between 1995 and 2005, FDI stocks were particularly fast in Africa and Latin America. The Russian Federation and other CIS countries also emerged as important destinations.<sup>11</sup>

United States outward FDI in extractive industries was fairly evenly distributed among Africa, developing Asia and Latin America and the Caribbean, each accounting for 13-15% in 2005 of the total. In developing Asia, Indonesia received by far the largest share in 2005. In Latin America, excluding the financial centres, Brazil, Mexico and Peru, three countries with large mining potential, were the main recipients, while in Africa, where detailed destinations are not fully given, Egypt was one of the main recipients specified in 2005. Finally, of the transition economies, the Russian Federation was the leading host country of such FDI (table IV.1).

The importance of extractive industries in inward FDI varies greatly by host economy. In all major regional groups, there are countries in which they account for a significant share of the total inward FDI stock. This applies, for example, to Australia, Canada and Norway among developed countries, Botswana, Nigeria and South Africa in Africa, Bolivia, Chile and Venezuela in Latin America and the Caribbean, and Kazakhstan in South-East Europe and the CIS (figure IV.3). Moreover, extractive industries account for the bulk of inward FDI of many low-income, mineral-rich countries. Due to their small domestic markets and weak productive capabilities, they tend to have few other areas into which they can attract FDI.

The recent boom in commodity prices has aroused growing investor interest in opportunities for mineral extraction in low-income countries.

For example, the record inflows of FDI into Africa in 2004-2006 were mostly driven by projects in extractive industries, notably in oil and gas (chapter II; *WIR05*: 41, *WIR06*: 45).<sup>12</sup> Most of the largest FDI-recipient countries in Africa in 2006 were rich in oil or metallic minerals. Similar developments have been observed in Latin America, where most countries with mineral resources have seen increases in FDI in related industries in recent years.<sup>13</sup> Following new discoveries, a number of new FDI recipients have emerged among developing countries and economies in transition. In oil and gas, Chad and Equatorial Guinea have received large FDI inflows. In Kazakhstan, during the period 1993-2006, oil and natural gas extraction activities attracted cumulative FDI inflows of \$35 billion (National Bank of Kazakhstan, 2007). In addition, Kazakhstan, Mali, Mongolia and Papua New Guinea are among the countries that have emerged as major recipients of FDI in metal mining.

Foreign companies account for varying shares of metallic mineral and diamond production in individual host countries. Based on the value of production at the mining stage, of 33 major mining countries of the world, foreign affiliates were responsible for virtually all production in 2005 in some LDCs, such as Guinea, Mali, the United Republic of Tanzania and Zambia, as well as in Argentina, Botswana, Gabon, Ghana, Mongolia, Namibia and Papua New Guinea (figure IV.4). In another 10 major mining countries – a mix of developed, developing and transition economies – foreign affiliates accounted for between 50% and 86% of all production. In contrast, in the Islamic Republic of Iran, Poland and the Russian Federation, the share of foreign affiliates was very small or negligible (figure IV.4).

In oil and gas, the share of foreign companies is generally lower than in metal mining. At the global level, foreign companies accounted for an estimated 22% of total oil and gas production in 2005 (table IV.2). The average share was higher in developed countries (36%) than in developing countries (19%) and the transition economies of South-East Europe and the CIS (11%). Moreover, there were wide variations among the various country groups. In West Asia, which was responsible for almost a quarter of the world production of oil and gas in 2005, foreign companies accounted for only 3% of production, whereas in sub-Saharan Africa they accounted for 57% on average. By individual country, foreign companies were responsible for more than half of production in Angola, Argentina, Equatorial Guinea, Indonesia, Sudan and the United Kingdom. At the other end of the spectrum were Iraq, Kuwait, Mexico and Saudi Arabia, in which no production was attributed to foreign firms (figure IV.5).

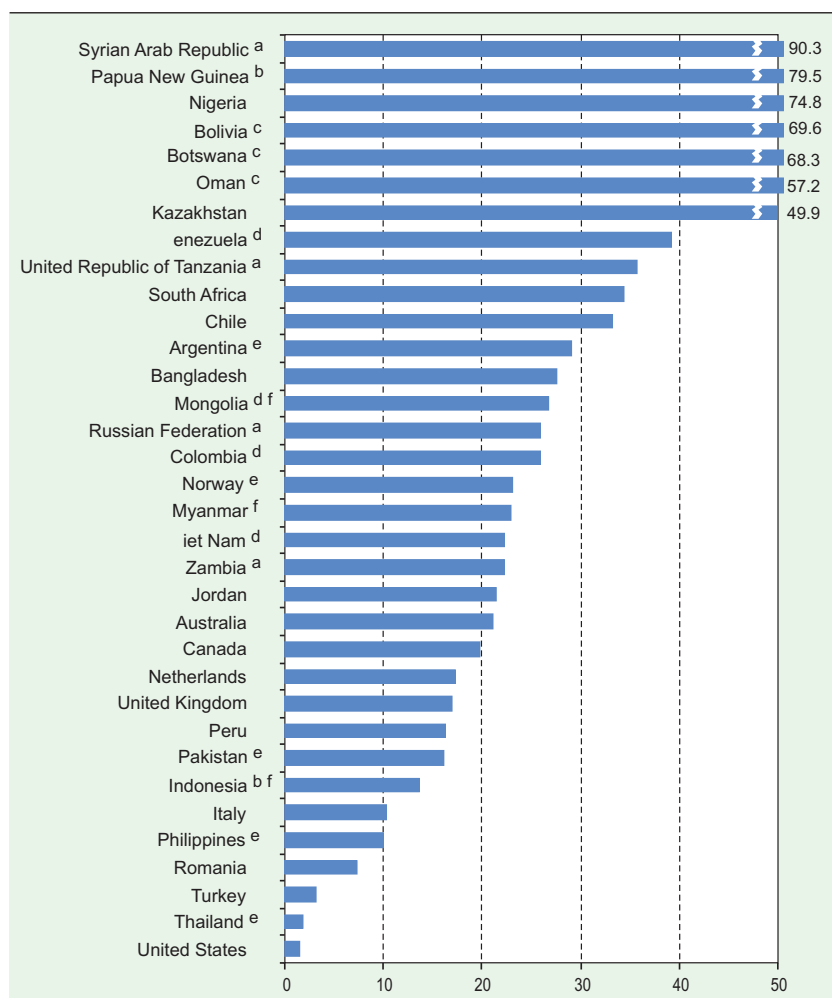
**Table IV.1. United States outward FDI stock in extractive industries, 1985, 1990, 1995, 2000 and 2005**  
(Millions of dollars)

Host region/economy	1985	1990	1995	2000	2005
Total world	58 724	52 826	68 632	72 111	114 386
Developed countries	33 360	34 261	41 865	33 398	55 802
EU	16 357	12 495	18 573	10 948	11 052
Netherlands	1 928	1 429	1 449	2 218	4 018
United Kingdom	9 231	10 347	12 061	8 135	5 995
Other developed countries	17 003	21 766	23 292	22 450	44 750
Norway	2 695	3 537	3 257	2 463	5 331
Canada	10 443	10 494	9 875	13 629	33 718
Australia	1 681	2 801	2 628	6 222	5 059
Developing economies	17 997	12 627	21 839	37 045	49 835
Africa	4 072	2 054	2 167	7 204	15 305
Botswana	..	2	5	..	..
Cameroon	..	..	158	..	..
Chad	..	..	106	..	..
Congo	..	21	..	..	..
Congo, Democratic Republic of	..	12	69	..	..
Côte d'Ivoire	..	36	42	..	..
Egypt	1 640	1 073	899	1 424	4 085
Gabon	..	324	108	..	..
Kenya	..	42	63	..	..
Nigeria	..	..	578	452	278
South Africa	..	..	..	2	-5
Sudan	..	5	9	..	..
Unspecified Africa	2 432	434	..	5 326	10 947
Latin America and the Caribbean	5 042	4 196	6 056	16 533	17 225
Argentina	466	471	707	580	508
Bahamas	845	345	62	..	..
Bermuda	-168	..	..	..	118
Bolivia	..	168	102	..	..
Brazil	381	507	1 092	680	2 040
British Virgin Islands	14	..	123	1 249	2 461
Chile	60	..	..	3 248	1 040
Colombia	1 053	461	1 255	695	630
Ecuador	..	102	657	464	557
El Salvador	..	..	76	..	..
Guatemala	47	49	79	..	..
Mexico	53	..	61	327	2 082
Panama	515	682	707	..	95
Peru	579	..	81	1 544	2 082
Trinidad and Tobago	399	..	350	..	..
Venezuela	66	113	398	3 379	1 378
Unspecified Latin America and the Caribbean	643	1 199	393	4 367	4 230
Asia and Oceania	8 883	6 377	13 616	13 308	17 305
West Asia	2 208	1 317	2 667	2 179	5 665
Bahrain	..	-88	-130	..	..
Iran, Islamic Republic of	..	..	310	..	..
Oman	..	..	82	..	..
Qatar	..	..	472	..	..
Saudi Arabia	852	..	176	107	..
Turkey	111	..	124	16	48
United Arab Emirates	664	299	230	..	1 064
Unspecified West Asia	581	1 105	482	2 056	4 553
South, East and South-East Asia	6 675	5 071	10 949	11 129	9 602
China	211	114	951	1 404	1 717
India	28	..	26	-343	134
Indonesia	3 895	2 751	4 449	7 212	6 003
Malaysia	605	402	639	..	1 493
Philippines	109	..	326	..	414
Singapore	354	650	2 408	15	-160
Thailand	803	626	1 374	1 111	..
Unspecified South, East and South-East Asia	319	135	..	1 729	..
Unspecified Asia and the Pacific	..	..	..	..	2 038
South-East Europe and CIS	..	1	692	1 670	3 148
Azerbaijan	..	..	206	..	..
Kazakhstan	..	..	-54	..	..
Russian Federation	..	1	392	79	3 148
Unspecified South-East Europe and CIS	..	..	152	1 591	..
Unspecified	7 367	5 937	4 236	-2	5 601

Source: UNCTAD, FDI/TNC database ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics)), based on data from the United States Department of Commerce.



Figure IV.3. Share of extractive industries in the inward FDI stock of selected economies, 2005  
(Per cent)



Source: UNCTAD estimates, based on data from the UNCTAD FDI/TNC database ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics)).

<sup>a</sup> 2001.

<sup>b</sup> 1997.

<sup>c</sup> 2003.

<sup>d</sup> 2002.

<sup>e</sup> 2004.

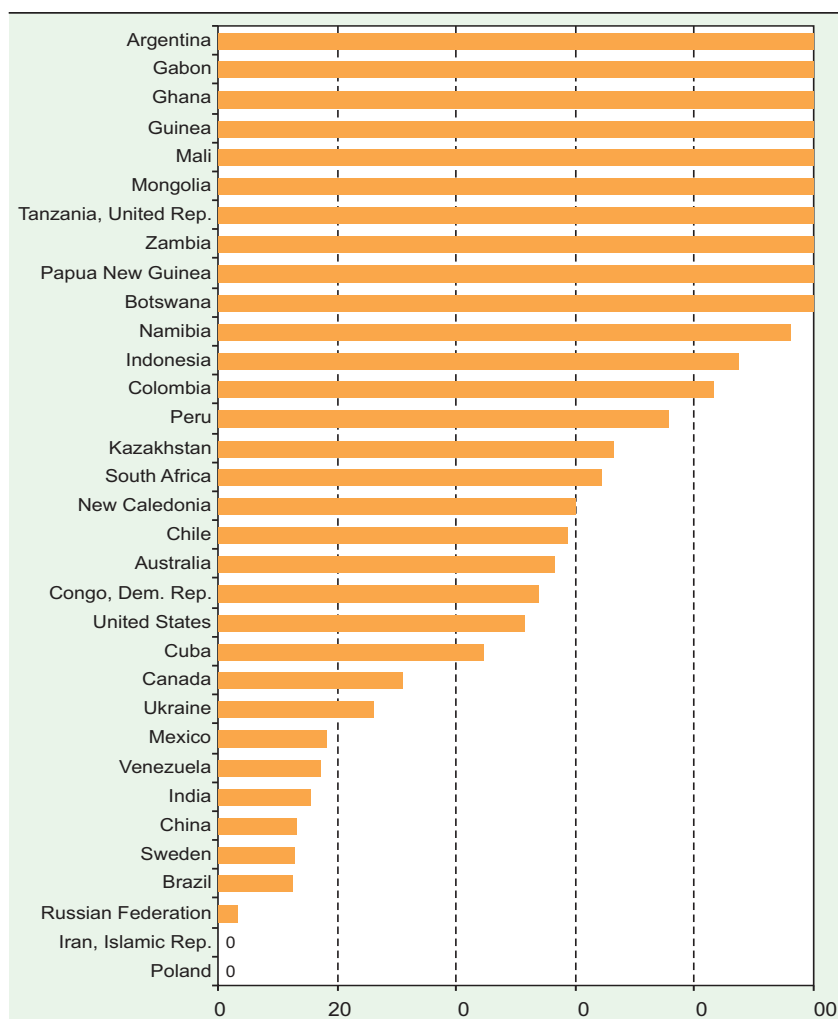
<sup>f</sup> On an approval basis.

During the period 1995-2005, the share of foreign companies in oil and gas extraction evolved differently in various regions and countries. In Europe, it declined from 47% to 36% (table IV.2). Within developing countries, a stable overall average share masked diverging trends. In Africa and Latin America, the shares of foreign companies increased to 41% and 18%, respectively, whereas in developing Asia, their share fell from 19% to 12% on average. In South-East Europe and the CIS, their share increased from 3% to 11%. Foreign companies' share rose particularly fast in Angola, Argentina, Kazakhstan, the Libyan Arab Jamahiriya and Nigeria, and declined the most in Indonesia and Malaysia, as well as in Norway and the United Kingdom among the developed countries.

The involvement of TNCs in the exploration and extraction of oil and gas takes various contractual forms, such as concessions, joint ventures, production-sharing agreements (PSAs) and service contracts (table IV.3; chapter VI), each of which has different implications for recording data on the amount of related FDI and non-FDI flows (box IV.1). Overall, as of June 2007, PSAs were the most frequently used contractual form, accounting for more than 50% of all contracts involving foreign TNCs in the most important oil- and gas-producing developing economies. Such agreements were the main form of TNC participation in countries such as China, Equatorial Guinea, Indonesia, Iraq, the Libyan Arab Jamahiriya, Qatar, Sudan and Viet Nam. Concessions and joint ventures were the next most frequently



**Figure IV.4. Foreign affiliates<sup>a</sup> share in metal mining production<sup>b</sup> of selected host countries with notable deposits of minerals,<sup>c</sup> 2006  
(Per cent)**



Source: UNCTAD, based on data from the Raw Materials Group.

<sup>a</sup> The share of foreign affiliates includes all firms with foreign ownership of at least 10%.

<sup>b</sup> Measured by value of production.

<sup>c</sup> Including diamonds, and excluding artisanal mining.

used contractual forms, and the dominant forms in Algeria, Angola, Brazil, Kazakhstan and the Russian Federation (table IV.3). Service contracts were less numerous but nevertheless important, for example, in the Islamic Republic of Iran and Kuwait.<sup>14</sup>

It is not straightforward to establish a link between the number and types of contracts with the size of FDI flows. First of all, the average size of contract areas varies considerably, from very large in Saudi Arabia<sup>15</sup> and Sudan to relatively small in Brazil, Kuwait and the Russian Federation (table IV.3). Secondly, different countries of the same region or group could take divergent approaches to legal forms. In Africa, for example, Angola uses mostly concessions, Equatorial Guinea and Sudan mostly PSAs. Thirdly, each contract has its own

terms, resulting in widely varying FDI and non-FDI flows as well as implications for development (chapter VI).

## B. The changing universe of TNCs in extractive industries

TNCs have been present in metal mining since the sixteenth century (Harvey and Press, 1990; McKern, 1976), and in the oil industry since the discovery of oil in the late nineteenth century (Yergin, 1991). In colonial times and the early post-colonial decades of the 1950s and 1960s, TNCs from developed countries dominated the extractive industries in developing countries. Since then, their

**Table IV.2. Oil and gas production, total and by foreign companies, by region and selected economy,<sup>a</sup> 1995 and 2005**  
(Million barrels of oil equivalent)

Region/economy	1995			2005		
	Total production	Production by foreign companies	Share of foreign companies (%)	Total production	Production by foreign companies	Share of foreign companies (%)
World	37 952	..	..	47 001	10 550	22.4
World excluding North America	30 242	5 572	18.4	39 331	7 941	20.2
Developed economies	11 968	..	..	12 056	4 341	36.0
Europe	3 839	1 795	46.8	3 926	1 409	35.9
European Union	2 619	1 268	48.4	2 357	937	39.8
Of which:						
Netherlands	488	69	14.2	448	51	11.4
United Kingdom	1 547	999	64.6	1 325	666	50.3
Other developed Europe	1 220	527	43.2	1 569	472	30.1
Of which:						
Norway	1 220	527	43.2	1 569	472	30.1
North America	7 710	..	..	7 670	2 609	34.0
Of which:						
Canada	1 712	..	..	2 072	370	17.9
United States	5 998	..	..	5 597	2 239	40.0
Other developed countries	420	203	48.4	461	323	70.1
Developing economies	19 160	3 406	17.8	25 851	4 877	18.9
Africa	3 483	770	22.1	5 049	2 054	40.7
North Africa	1 974	236	12.0	2 706	713	26.4
Of which:						
Algeria	925	3	0.3	1 313	162	12.4
Egypt	420	127	30.2	497	194	39.1
Libyan Arab Jamahiriya	591	86	14.5	735	255	34.7
Sub-Saharan Africa	1 509	534	35.4	2 344	1 340	57.2
Of which:						
Angola	254	159	62.4	507	370	73.0
Equatorial Guinea	..	..	..	160	146	91.5
Nigeria	943	182	19.3	1 301	536	41.2
Sudan	..	..	..	120	77	64.2
Latin America and the Caribbean	3 872	415	10.7	5 215	960	18.4
Latin America	3 759	345	9.2	4 946	871	17.6
Of which:						
Argentina	410	77	18.9	549	444	80.9
Brazil	298	4	1.4	712	14	2.0
Mexico	1 307	-	-	1 665	-	-
Venezuela	1 246	77	6.2	1 417	60	4.2
The Caribbean	113	70	62.0	268	90	33.4
Developing Asia	11 768	2 196	18.7	15 569	1 847	11.9
West Asia	8 263	778	9.4	11 028	389	3.5
Of which:						
Iran, Islamic Republic	1 689	-	-	1 985	47	2.4
Iraq	287	-	-	773	..	..
Kuwait	683	-	-	1 036	..	..
Qatar	256	63	24.4	656	149	22.8
Saudi Arabia	3 364	-	-	4 188	-	-
United Arab Emirates <sup>b</sup>	811	89	11.0	1 226	173	14.1
South, East and South-East Asia	3 504	1 418	40.5	4 541	1 458	32.1
Of which:						
China	1 186	38	3.2	1 604	54	3.4
Indonesia	986	886	89.8	869	659	75.8
Malaysia	445	263	59.2	628	273	43.5
Oceania	37	26	70.7	18	17	93.9
South-East Europe and CIS	6 824	168	2.5	9 093	987	10.8
Of which:						
Kazakhstan	188	45	24.0	626	302	48.2
Russian Federation	5 659	107	1.9	7 125	531	7.5
Uzbekistan	..	..	..	393	21	5.4

Source: UNCTAD, based on data from IHS.

<sup>a</sup> The table lists 28 major producer economies.

<sup>b</sup> Abu Dhabi only.

Note: Oil and gas production by foreign companies includes extraction carried out by majority foreign-owned firms and attributed to them under PSAs, concessions, joint ventures, or other contractual forms. Foreign company participation through pure service contracts is not included. For each block or field of production worldwide, annual production has been split between the firms involved according to their net percentage share of the output.

**Figure IV.5. Share of foreign companies in the oil and gas production<sup>a</sup> of selected major oil- and gas-producing economies, 2005**  
(Per cent)



Source: UNCTAD, based on data from IHS.

<sup>a</sup> Measured by million barrels of oil equivalent.

Note: See note to table IV.2.

relative importance has evolved differently in metal mining on the one hand and the oil and gas industry on the other. In general, the major metal mining TNCs are smaller than their oil and gas peers, but TNCs play a more dominant role in the former industry than in the latter.

## 1. TNCs in the metal mining industry

In the metal mining industry, privately owned TNCs remain the dominant producers. At the same time, significant changes are taking place in the way companies position themselves, and the strategies of newcomer firms from developing and transition economies tend to differ in some ways from those

of the more established players. As in many other industries, there are conflicting tendencies between efforts at consolidating operations and those aimed at focusing on core activities while relying more on specialized service providers. However, following a series of recent M&As, concentration is rising.

### a. Continued dominance of private firms

In the 1960s and 1970s, the metal mining industry was affected by widespread nationalizations, leading to more State ownership (box IV.2). For example, the share of the seven largest TNCs in copper mining outside the centrally planned economies fell from 60% in 1960 to 23% in 1981 as a result of

**Table IV.3. Main forms of TNC contracts in the oil and gas industry of selected developing and transition host economies, June 2007**

(Number of contracts and percentage share)

Host economy	Distribution of foreign TNCs' contracts by main type									Average size of contract territory (km <sup>2</sup> )	
	Production sharing		Service or risk service		Concession or joint venture		Other and unspecified		Total		
	Number	Share (%)	Number	Share (%)	Number	Share (%)	Number	Share (%)	Number		Share (%)
Algeria	25	22.9	4	3.7	66	60.6	1	0.9	109	100.0	2 357
Angola	21	19.1	-	-	89	80.9	-	-	110	100.0	640
Brazil	-	-	-	-	189	100.0	-	-	189	100.0	283
China	74	97.4	-	-	-	-	2	2.6	76	100.0	2 973
Equatorial Guinea	20	100.0	-	-	-	-	-	-	20	100.0	1 333
Indonesia	155	100.0	-	-	-	-	-	-	155	100.0	2 902
Iran, Islamic Republic	-	-	16	80.0	-	-	4	20.0	20	100.0	3 575
Iraq	7	87.5	1	12.5	-	-	-	-	8	100.0	625
Kazakhstan	9	9.7	-	-	84	90.3	-	-	93	100.0	1 558
Kuwait	-	-	3	100.0	-	-	-	-	3	100.0	120
Libyan Arab Jamahiriya	107	80.5	-	-	26	19.5	-	-	133	100.0	4 497
Nigeria	81	58.3	-	-	57	41.0	1	0.7	139	100.0	579
Qatar	26	100.0	-	-	-	-	-	-	26	100.0	833
Russian Federation	5	1.1	-	-	470	98.9	-	-	475	100.0	343
Saudi Arabia	-	-	-	-	-	-	3	100.0	3	100.0	75 056
Sudan	14	77.8	-	-	4	22.2	-	-	18	100.0	50 770
United Arab Emirates	-	-	-	-	-	-	12	100.0	12	100.0	375
Uzbekistan	14	43.8	-	-	-	-	18	56.3	32	100.0	3 562
Venezuela	19	38.0	-	-	20	40.0	10	20.0	50	100.0	597
Viet Nam	1	100.0	-	-	-	-	-	-	1	100.0	554
Total	578	34.6	24	1.4	1 005	60.1	51	3.1	1 672	100.0	2 067
Total excluding CIS	564	51.1	21	1.9	451	40.9	51	4.6	1 104	100.0	2 852

Source: UNCTAD, based on data from IHS.

nationalizations (UNCTC, 1983: 208). By the early 1980s, the participation of TNCs in many developing countries had become limited to minority holdings and non-equity agreements with State-owned enterprises. However, many of the nationalizations undertaken in Africa and Latin America in the metal mining industry turned out to be failures (Radetzki, forthcoming). The subsequent 30 years witnessed a continuous decline in the industry, with falling

metal prices and profits. In response, during the 1990s, several countries began reopening their metal mining industries to FDI and privatized their State-owned mining enterprises. By the early 2000s, the privatization process in the industry worldwide, apart from China, had been more or less completed.<sup>16</sup>

Worldwide, there are today more than 4,000 metal mining firms, mostly engaged in exploration and extraction (figure IV.6). Most of the 149

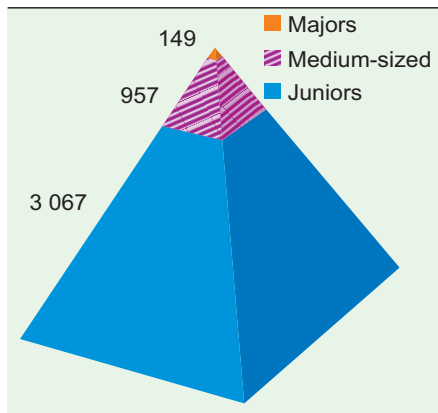
#### Box IV.2. Nationalizations in metal mining, 1960-1976

In the 1960s and 1970s, governments placed high hopes on the socio-economic development potential of metal mining, based on the industry's strong economic performance following the end of the Second World War. Most government acquisitions of companies or shares in them were made when the market was at its peak. The number of expropriations of foreign mining enterprises increased from 32 between 1960 and 1969 to 48 between 1970 and 1976.

- During the first period, copper mines were nationalized in Chile, Peru, Zaire (now the Democratic Republic of the Congo) and Zambia. Bauxite production in Guinea was also expropriated.
- During the second period, the Government of Jamaica purchased a 51% stake in three previously fully foreign-owned bauxite mines, while it retained the foreign investors as mine operators; Madagascar nationalized its chromite mines; and in Brazil, Chile, India, Mauritania and Venezuela iron ore production was partially taken over by their Governments. The Government of Morocco undertook the production and marketing of phosphate, and the Governments of Indonesia and Bolivia took over control of tin production.

Source: UNCTC, 1978: 14-18.

**Figure IV.6. The pyramid of metal mining companies, 2006**  
(Number of companies)



Source: UNCTAD, based on data from the Raw Materials Group.

“majors”<sup>17</sup> are TNCs, the majority of which have production facilities covering mining, smelting as well as refining. These companies account for some 60% of the total value at the mining stage of all non-energy minerals produced.<sup>18</sup> About 950 medium-sized companies account for almost 40% of the value of production. “Junior” companies include all non-producing companies, notably specialized exploration companies. Much like high-tech companies in the information and communications technology and biotechnology industries, they engage in high-risk investments that can sometimes prove very profitable. If they do find a deposit, it is typically sold to a major mining company with the necessary capital, experience and competence to invest in production. In addition to these 4,000 plus companies, there are a number of unidentified small and medium-sized mining enterprises all over the world, including those engaged in artisanal mining (box III.2).

In 2005, of the 25 leading metal mining companies (ranked by their share in the value of world production), 15 were headquartered in developed countries (table IV.4), 8 were from developing countries and the two remaining were from the Russian Federation.<sup>19</sup> In contrast to the situation in the oil industry (section B.2), State-owned companies occupy a modest place in the list, with the exception of the Corporación Nacional del Cobre de Chile (Codelco), Alrosa (Russian Federation) and KGHM Polska Miedz (Poland). Collectively these latter companies accounted for approximately 14% of the value of all non-energy minerals produced

**Table IV.4. Top 25 metal mining companies, 2005<sup>a</sup>**

Rank 2005	Rank 1995	Company name	Country	State ownership (%)	Share in the value of world production (%)	Cumulative (%)
1	4	BHP Billiton	Australia	-	4.8	4.8
2	2	Rio Tinto	United Kingdom	-	4.6	9.4
3	6	CVRD	Brazil	12	4.4	13.8
4	1	Anglo American	United Kingdom	-	4.3	18.1
5	5	Codelco	Chile	100	3.2	21.3
6	7	Norilsk Nickel	Russian Federation	-	2.2	23.5
7	9	Phelps Dodge	United States	-	2.0	25.5
8	22	Grupo México	Mexico	-	1.6	27.1
9	26	Newmont Mining	United States	-	1.3	28.4
10	11	Freeport McMoran	United States	-	1.3	29.7
11	13	Falconbridge	Canada	-	1.2	30.9
12	53	Anglogold Ashanti	South Africa	3	1.1	32.0
13	15	Inco	Canada	-	1.0	33.0
14	.. <sup>b</sup>	Xstrata	Switzerland	-	1.0	34.0
15	14	Barrick Gold	Canada	-	1.0	35.0
16	.. <sup>c</sup>	Alrosa	Russian Federation	69	0.9	35.9
17	18	Placer Dome	Canada	-	0.9	36.8
18	31	Teck Cominco	Canada	-	0.8	37.6
19	10	Gold Fields	South Africa	10	0.8	38.4
20	19	KGHM Polska Miedz	Poland	44	0.7	39.1
21	88	Antofagasta	United Kingdom	-	0.7	39.8
22	8 <sup>d</sup>	Impala Platinum	South Africa	-	0.7	40.5
23	113	Glencore	Switzerland	-	0.6	41.1
24	.. <sup>e</sup>	Harmony Gold Mining	South Africa	-	0.6	41.7
25	37	Debswana	Botswana	50	0.6	42.3

Source: UNCTAD, based on data from the Raw Materials Group.

<sup>a</sup> The ranking is based on the value of total production, including diamond.

<sup>b</sup> Glencore had not formed Xstrata in 1995 (MIM, a recent acquisition of Xstrata, was ranked 33).

<sup>c</sup> No production data are available for this year.

<sup>d</sup> In 2000, Impala was controlled by Gencor Ltd.

<sup>e</sup> The company did not exist in 1995.

in the world.<sup>20</sup> The top four are global players with worldwide operations, and they produce a variety of metals.<sup>21</sup> The following six are all more or less single commodity producers with the exception of Grupo México. A decade before, in 1995, there were 17 leading metal mining companies headquartered in developed countries – two more than in 2005 (annex table A.IV.5); and there were one less each of developing-country firms and Russian firms (7 and 1 respectively). In addition, with its acquisition of Inco (a Canadian nickel producer) CVRD was estimated to emerge as the top metallic mineral producer in the world in 2006, the first time that a Latin American-based company would occupy that position.

The degree of concentration in the metal mining industries increased significantly between 1995 and 2005. Following a series of cross-border M&As (section IV.A), the 10 largest metal mining companies in 2005 controlled about 30% of the total value of all non-energy minerals produced globally – up from 26% in 1995 (table IV.4 and





annex table A.IV.5). This share reached an estimated 33% in 2006. In all metals, the share of the top 10 production companies increased between 1995 and 2005. This degree of concentration rose the fastest in gold mining (from 38% to 47%), followed by iron ore (from 44% to 52%), copper (from 51% to 58%) and zinc production (from 38% to 43%).

### b. Varying degrees of internationalization

The level of internationalization of the world's top metal mining companies varies substantially. While some of them are present in a large number of foreign locations, others are at an early stage in terms of internationalization, and a few do not have any foreign exploration or production at all.

In *exploration*, the activities of certain TNCs, such as Anglo American and Xstrata (present in 14 countries each), were widely spread in 2006 (table IV.5). All but four of the top-25 producers (Codelco, Debswana, KGHM Polska Miedz and Norilsk Nickel) were involved in exploration activities in at least one foreign country. In terms of *mining production*, Rio Tinto was the company with activities in the largest number (10) of host countries in 2005, followed by Anglo American and Anglogold Ashanti, both present in nine host countries (table IV.6). On the other hand, as in the case of exploration, large producers from developing countries like Codelco, CVRD and Debswana (and KGHM Polska Miedz of Poland) did not have any overseas mining production in that year.<sup>22</sup> In *smelting and refining*, Glencore was the most internationalized top metal mining company, with a presence in 13 host countries, followed by BHP Billiton (9) (table IV.7). Leading firms appear to be more internationalized in exploration and mining production than in smelting and refining. Of the 25 top companies, 21 had overseas mining production activities, whereas just over half of them (13) had foreign refining capacities.

Internationalization of production also varies by metal. For example, in iron ore mining, only half of the top 10 producer companies had overseas production activities in 2005 (annex table A.IV.6). In fact, CVRD, the largest iron ore producer, did not have foreign activities (until 2006) while the production of the second largest firm, Rio Tinto, was 100% abroad. Copper, nickel and zinc production is more internationalized. In each of these metals, 7 of the top 10 producers had foreign production activities in 2005. However, in copper and nickel, the largest company by volume had no production abroad: Codelco and Norilsk Nickel.<sup>23</sup> In zinc, in turn, the largest producer, Teck Cominco, was highly internationalized.

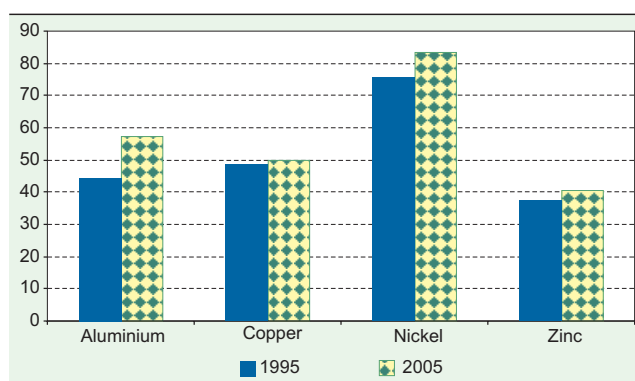
Finally, gold production appears to be the most internationalized, with 8 of the 10 largest firms having production abroad, including the three largest ones (annex table IV.6).<sup>24</sup>

Of developing host economies of metal mining TNCs, the largest number of *exploration* projects was located in Peru, followed by Chile, Indonesia and the United Republic of Tanzania (table IV.5). As far as *mining production* is concerned, in 2006, Chile and Peru hosted the largest number of top 25 mining companies (table IV.6). As for refineries, Chile was host to the largest number of companies, followed by South Africa and Peru (table IV.7).

The degree of forward (downstream) *vertical integration* along the production/value chain within firms in the metal mining industries varies both by metal and over time. Traditionally, mining and smelting activities have often been integrated within the same company. A snapshot of the situation in 1995 compared to 2005, for aluminium, copper, nickel and zinc, suggests that control over refineries by the top 20 mining companies has increased (figure IV.7). Similarly, the leading refiners have taken steps to gain greater control over the mining production stages. The overall trend is of increasing vertical integration in international (as well as national) production in the industries, which is most clearly seen in the movement of nickel miners downstream into refining.<sup>25</sup>

Firms in the *aluminium* industry have traditionally been strongly vertically integrated, with mining and smelting activities located in close proximity. In some cases, smelters have been set up in countries where cheap electricity is available, as in Bahrain, Mozambique (Mozal project) and Norway. On the other hand, the level of vertical integration in *zinc* production is lower (figure IV.7). A number of smelters in both Europe and North America have

Figure IV.7. Top 20 mining companies' share in the value of refined production, 1995 and 2005 (Per cent)



Source: UNCTAD, based on data from the Raw Materials Group.



been buying their concentrate inputs from various sources all over the world. Rising energy prices have made integrated production a more attractive option, however. *Copper* exhibits a relatively stable level of vertical integration, between those of aluminium and zinc. In the *iron ore industry*, vertical integration has seen an upswing since the late 1990s with the entry of new major global steel companies with roots in India (Mittal Steel and Tata Steel)<sup>26</sup> and the Russian Federation (Severstal).<sup>27</sup> These companies have integrated iron and steel works based on a fully controlled supply of raw materials. Posco (Republic of Korea) follows a similar integrated approach. For example, it is building its next integrated steelworks in India, close to the location of iron ore deposits.<sup>28</sup>

While there appears to be a trend towards higher levels of vertical integration between the mining and refining stages of production, the opposite has been observed between exploration and production:

upstream integration with exploration is declining as mining companies develop strategic relationships with junior, specialized exploration companies. Exploration expenditure data show that the juniors now account for a larger proportion of such activities (figure IV.8). More generally, specialized mining suppliers play an important role in the metal mining industry (box IV.3).

## 2. TNCs in oil and gas

### a. The Seven Sisters have given way to State-owned companies

Until the 1970s, a few major TNCs from the United States and Europe dominated the international oil industry. In 1972, 8 of the top 10 oil producers were privately owned TNCs (Clarke, 2006), including

#### Box IV.3. The role of mining suppliers

Specialized suppliers of equipment and services are important players in metal mining. Many of them are also increasingly transnational. Suppliers to the mining industry can be grouped according to the markets they address in each of the main stages of mining. Highly knowledge-intensive inputs are required in the production of both equipment and services. Design and technology are embedded in the capital equipment used in the mining industry as well as in the services, which require customization for the unique conditions of each mine. Some firms operate across several markets, providing mining and mineral processing equipment with the associated services.

The growing role of such suppliers is being driven by the reorganization of global mining production and technological rejuvenation of the industry, with continued improvements in exploration, mining and mineral processing.<sup>a</sup> Suppliers are focused on specific niches in which they have a globally dominant position.

For some types of mining equipment there is a high level of international specialization of suppliers. Most of these companies are headquartered in the United States or the Nordic countries (box table IV.3.1). However, there are also some examples of equipment suppliers from emerging market economies, such as Belarus, Chile and South Africa.

Examples of some knowledge-intensive service suppliers include large international consulting firms that integrate engineering, project management, procurement and construction activities, such as Kvaerner (Norway), Hatch (Canada), and Bechtel Group (United States); medium-sized specialized engineering consulting companies, such as Bateman (South Africa) SRK Consulting (South Africa), and AMC Consultants (Australia); and small- to medium-sized mining and geological software providers, such as Maptek (Australia).

Box table IV.3.1. Leading suppliers of mining equipment, 2007

Type of equipment	Lead suppliers	Home country
Exploration drilling equipment	Boart Longyear Atlas Copco, Sandvik	United States Sweden
Drilling equipment, underground	Atlas Copco, Sandvik	Sweden
Drilling equipment, open pit	Atlas Copco, Sandvik Bucyrus, P&H, Terex/ Reeddrill	Sweden United States
Draglines	Bucyrus, P&H	United States
Load haul dump, underground	Atlas Copco, Sandvik Caterpillar	Sweden United States
Explosives	Orica, Dyno Nobel AEL Enaex	Australia South Africa Chile
Trucks, open pit	Caterpillar Hitachi Construction Machinery, Komatsu (Haulpak) Liebherr Terex/Unit Rig Belaz	United States Japan Germany United States Belarus
Articulated dump trucks	Komatsu Caterpillar, Le Tourneau Bell Volvo Astra	Japan United States South Africa Sweden Italy
Shovels	Caterpillar, Bucyrus, P&H Hitachi Construction Machinery, Komatsu Liebherr, Terex	United States Japan Germany
Pumps	ITT/Flygt Weir Group Grindex	United States United Kingdom Sweden
Crushers	Metso FLSmidth Minerals Terex, PR Engineering	Finland Denmark United States
Mills	Metso, Outotech Polysius	Finland Germany

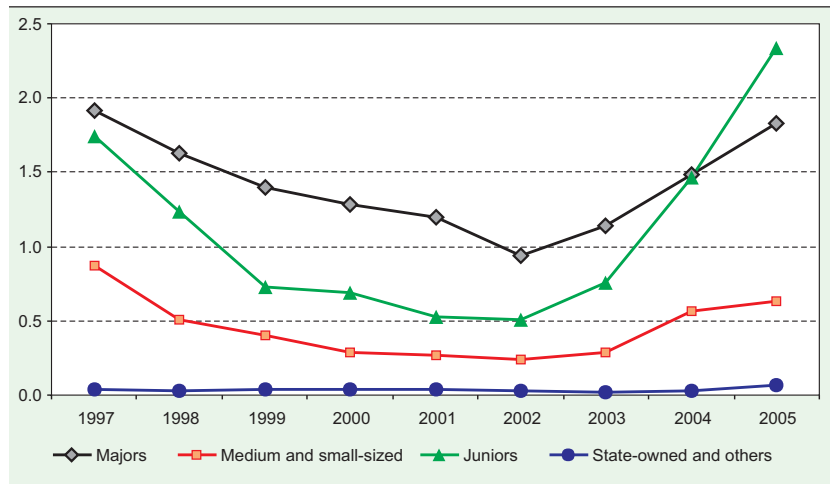
Source: UNCTAD, based on data from the Raw Materials Group.

Source: UNCTAD, based on Urzúa, 2007, and data from the Raw Materials Group.

<sup>a</sup> Automation and improvements in underground communication and control systems is leading to the introduction of remote-controlled drilling, roof support and hauling equipment with benefits in terms of productivity and workers' safety as people are removed from high-risk work.



**Figure IV.8. Global exploration expenditure, by type of company, 1997-2005**  
(Billions of dollars)



Source: Metals Economics Group, 2006.

the so-called Seven Sisters (chapter III). These were fully integrated oil companies, active in the extraction and transportation of oil as well as in the production and marketing of petroleum products. In the 1960s, they started to face competition from some developed-country State-owned companies – such as the *Compagnie Française des Pétroles* (France) (predecessor of today's Total) and ENI (Italy). Subsequently, in the early 1970s, with the emergence of OPEC and the wave of oil nationalizations in developing countries, the ownership picture in the oil industry changed permanently, with State-owned national oil companies replacing the dominance of the

private TNCs (Yergin, 1991; box IV.4). For example, the share of TNCs in crude oil production plummeted from 94% in 1970 to 45% in 1979 (UNCTC, 1983: 197).

The major oil companies remain giant corporations in terms of their foreign assets; they ranked in the top 10 in UNCTAD's ranking of the world's 100 largest TNCs in 2005 (chapter I).<sup>29</sup> But these large, privately owned TNCs from developed countries no longer control the bulk of the world's oil and gas reserves, and are no longer the leading oil and gas producers. In 2005, the top 10 oil-reserve-holding firms of the world were all State-owned

#### Box IV.4. Nationalizations in the oil industry

From the beginning of industrial activities in the 1850s till the First World War, petroleum extraction had been 100% privately owned (Yergin, 1991). Since then, the involvement of governments in the management and control of the industry has risen almost constantly. Two major forces have motivated home and host governments to intervene more, and to increase their share in the ownership and management of their oil and gas resources: the strategic importance of these resources for military and other industrial uses, and the considerable rents involved.

Outright nationalization of oil and gas firms, defined as the compulsory transfer of the ownership of the whole industry to the State (UNCTAD, 2000: 4),<sup>a</sup> first took place in the context of the Russian Revolution in 1917. This was followed by nationalizations in Bolivia (1937, 1969), Mexico (1938), Venezuela (1943), Iran (1951), and Argentina, Burma, Egypt, Indonesia and Peru in the 1960s (Kobrin, 1985). In the 1970s, nationalizations occurred in Algeria, Iraq, Kuwait, Libya and Nigeria, and there was a gradual increase in Saudi ownership of Aramco (Yergin, 1991). More recent examples of moves towards nationalizations are the Russian Government's bid to increase shares in petroleum companies and in extraction projects (chapter II), and Venezuela's push to reduce foreign TNCs' shares in individual projects.<sup>b</sup>

Nationalizations in the oil and gas industry have taken place in periods of favourable market conditions (high international demand and prices), domestic conditions (social consensus in support of nationalizations) and international political conditions. They have changed the global landscape of petroleum extraction, and contributed to the emergence and subsequent strengthening of State-owned firms.

Source: UNCTAD.

<sup>a</sup> Nationalizations differ from ordinary expropriations because they apply to the whole industry or the whole economy, and because they always result in a transfer of ownership to the State (ordinary expropriations can also lead to a transfer to a third, private party).

<sup>b</sup> It is debatable whether the increase in taxation in Bolivia is a case of nationalization or only a regulatory change.



companies from developing countries, accounting for an estimated 77% of the total, whereas Russian petroleum firms controlled an additional 6%, leaving only about 10% for privately owned developed-country TNCs such as ExxonMobil, BP, Chevron and the Royal Dutch Shell Group.<sup>30</sup> The remaining 7% was controlled by joint ventures between developed-country TNCs and developing-country State-owned oil companies (Baker Institute, 2007: 1).

In 2005, three State-owned enterprises topped the list of the world's 50 largest oil and gas producers: Saudi Aramco (Saudi Arabia), Gazprom (Russian Federation) and the National Iranian Oil Company (NIOC) (table IV.8). Saudi Aramco's annual production in 2005 was more than twice as large as that of the largest privately owned oil and gas producer: ExxonMobil (United States). Of the top 50 companies, more than half were majority State-owned, 23 were based in developing countries, 12 were based in South-East Europe and the CIS, and only 15 were from developed countries (table IV.8).<sup>31</sup>

A number of oil and gas firms from developing and transition economies have evolved into TNCs and matured in the past few years. Many, but not all of them are partly or fully State-owned.<sup>32</sup> Moreover, some of them, such as CNOOC (China), Pertamina (Indonesia), Petrobras (Brazil), PetroChina (an affiliate of CNPC),<sup>33</sup> and Sinopec<sup>34</sup> are listed on the New York Stock Exchange (Baker Institute, 2007). Some State-owned oil companies are run semi-independently or autonomously of their government owners, at least in some respects. For example, while Saudi Aramco is 100% State-owned, it has an independent board and decision-making capabilities.<sup>35</sup>

The concentration of the industry among the top 10 companies remained unchanged between 1995<sup>36</sup> and 2005 (41% of global production), but rose from 59% to 63% among the top 25. A worldwide review of oil and gas firms in 2006 identified five privately owned major TNCs emerging from a wave of consolidations in the industry (ExxonMobil, BP, Shell, Chevron, Total), more than a dozen large independent oil and gas companies (i.e. Repsol YPF, BG, BHP Billiton's oil and gas division, COP, Devon, Oxy, Apache, EnCana, Anadarko/Kerr McGee, PetroCanada, Woodside), about 750 smaller oil firms (most of which are also transnational) (Clarke, 2006), as well as various transnationalized service firms, mostly from North America and Western Europe (table IV.9). At the same time, a number of State-owned enterprises from developing and transition economies have become outward investors, the largest of which have been referred to as the new Seven Sisters (Hoyos, 2007).<sup>37</sup>

## ***b. TNCs from developing and transition economies are expanding overseas***

Whereas companies from developing and transition economies now control most of the global production of oil and gas, their degree of internationalization, although growing fast, is still relatively modest compared to that of the top privately owned oil TNCs (figure IV.9). Indeed, developed-country companies in the top 50 list undertook most of their production overseas (which corresponded to 17% of world production in 2005) (figure IV.9). On the other hand, of the 54% of global oil and gas production that was controlled by companies in developing and transition economies, only a fraction was produced abroad (figure IV.9).

Nevertheless, some of the oil and gas companies from developing and transition economies are rapidly expanding their overseas interests. In 2005, the combined foreign production of CNOOC, CNPC/PetroChina, Lukoil, ONGC, Petrobras, Petronas and Sinopec amounted to 528 million barrels of oil equivalent. This was more than the foreign production of ConocoPhillips, one of the large majors, that year (figure IV.10).

A country-by-country review of the outward expansion of State-owned TNCs reveals a common push to global status (table IV.10, box IV.5). Both CNPC and Petronas are involved in oil and gas production in more than 10 foreign countries, and Kuwait Petroleum Corporation, Petrobras and Sinopec in more than 5 foreign countries. Between 1995 and 2005, the number of foreign economies in which Petronas and CNPC/PetroChina extracted oil and gas increased by 10, Sinopec by 6 and ONGC by 5. The expanding overseas upstream production presence of selected developing- and transition-country TNCs is illustrated in figure IV.11.

Some developing- and transition-economy TNCs have invested large sums in oil and gas production deals around the world during the past two years, sometimes as part of larger consortia. In Uzbekistan, for example, a consortium of CNPC, the Korea National Oil Corporation (KNOC), Lukoil, Petronas and local Uzbekneftegaz has been formed to develop gas fields in the northwest of the country.<sup>38</sup> In Peru, the largest oil production field is being exploited by a consortium of CNPC (45%) and Pluspetrol (Argentina, 55%).

Emerging oil and gas TNCs have sometimes formed alliances to compete. For example, CNPC and Sinopec (China) are producing oil and gas in CIS countries such as Azerbaijan, Kazakhstan and Turkmenistan, and in Latin American countries such

**Table IV.8. The world's largest oil and gas extraction companies, ranked by total production,<sup>a</sup>  
2005**  
(Per cent and million barrels of oil equivalent)

Rank in world production	Rank in 1995	Company	Home country	State ownership (%)	Production abroad	Total production	Foreign/total production (%)	Number of host economies with production	Change in number of host economies with production since 1995
1	1	Saudi Aramco	Saudi Arabia	100	-	4 148.8	-	-	-
2	3	Gazprom	Russian Federation	51	5.6	3 608.5	0.2	2	1
3	2	NIOC	Iran, Islamic Republic	100	-	1 810.7	-	-	-
4	5	ExxonMobil	United States	-	1 426.5	1 725.7	82.7	23	4
5	4	Pemex	Mexico	100	-	1 666.2	-	-	-
6	13	BP	United Kingdom	-	1 290.6	1 572.6	82.1	19	2
7	6	Royal Dutch Shell	United Kingdom / Netherlands	-	1 045.2	1 482.7	70.5	25	-1
8	7	CNPC/PetroChina	China	100	188.3	1 119.6	16.8	14	10
9	33	Total	France	-	749.3	997.6	75.1	27	-
10	12	Sonatrach	Algeria	100	1.9	911.8	0.2	1	1
11	8	Petróleos de Venezuela	Venezuela	100	-	902.6	-	-	-
12	9	Kuwait Petroleum Corp	Kuwait	100	20.3	897.3	2.3	8	1
13	16	Chevron	United States	-	550.2	816.9	67.3	24	8
14	23	Abu Dhabi National Oil Co (ADNOC)	United Arab Emirates	100	-	794.9	-	-	-
15	11	Lukoil	Russian Federation	<sup>b</sup>	45.8	781.1	5.9	2	-
16	40	ConocoPhillips	United States	-	511.6	755.4	67.7	16	7
17	20	Petrobras	Brazil	56	66.3	749.6	8.8	8	3
18	18	Abu Dhabi Co Onshore Oil Operator	United Arab Emirates	40 <sup>c</sup>	-	710.9	-	-	-
19	22	Nigerian National Petroleum Co	Nigeria	100	-	697.7	-	-	-
20	51	TNK-BP	Russian Federation	<sup>d</sup>	-	691.8	-	-	-
21	25	Iraqi Oil Exploration Co	Iraq	100	-	679.7	-	-	-
22	21	ENI	Italy	20	584.4	657.4	88.9	20	9
23	43	Rosneft	Russian Federation	100	-	621.1	-	-	-
24	34	Surgutneftegaz	Russian Federation	-	-	550.7	-	-	-
25	19	National Oil Corp	Libyan Arab Jamahiriya	100	-	491.2	-	-	-
26	-	Petoro	Norway	100	-	483.5	-	-	-
27	14	Statoil	Norway	64	52.8	464.7	11.4	5	2
28	26	ONGC	India	74	34.8	403.7	8.6	5	5
29	-	Uzbekneftegaz	Uzbekistan	100	-	391.7	-	-	-
30	48	Repsol-YPF	Spain	-	365.8	369.5	99.0	9	-1
31	37	Qatar Petroleum	Qatar	100	-	365.3	-	-	-
32	29	Petroleum Development Oman	Oman	60 <sup>e</sup>	-	344.1	-	-	-
33	35	Sibneft	Russian Federation	30.5 <sup>f</sup>	-	343.8	-	-	-
34	-	Sinopec	China	77	48.9	316.6	15.4	6	6
35	-	Turkmenneftegaz	Turkmenistan	100	-	310.3	-	-	-
36	-	Abu Dhabi Petroleum Co	United Arab Emirates	<sup>h</sup>	-	284.4	-	-	-
37	46	Norsk Hydro	Norway	44	34.9	248.6	14.0	5	5
38	44	Petronas	Malaysia	100	97.7	242.4	40.3	11	10
39	38	Ecopetrol	Colombia	100	-	221.1	-	-	-
40	32	Egyptian General Petroleum Co	Egypt	100	-	214.0	-	-	-
41	50	CNOOC	China	71	46.1	211.0	21.8	2	1
42	-	Sultanate of Oman	Oman	100	-	206.4	-	-	-
43	28	Nederlandse Aardolie Mij	Netherlands	<sup>j</sup>	-	198.8	-	1	1
44	30	Yukos	Russian Federation	-	-	192.4	-	-	-
45	36	Tatneft	Russian Federation	33	-	191.2	-	1	1
46	41	Inpex	Japan	29 <sup>g</sup>	128.8	185.9	69.3	6	2
47	49	Slavneft	Russian Federation	20 <sup>k</sup>	-	182.2	-	-	-
48	45	A.P. Moller-Maersk	Denmark	-	30.4	181.5	16.7	3	2
49	-	BG	United Kingdom	-	114.3	172.8	66.2	8	6
50	39	Sidanco	Russian Federation	<sup>l</sup>	-	171.8	-	-	-

Source: UNCTAD, based on data from IHS.

<sup>a</sup> Excludes oil sands production. The production of joint ventures is counted under both the partner companies and the joint ventures themselves.

<sup>b</sup> ConocoPhillips owns 20% of the shares, its Russian partners 80%.

<sup>c</sup> Abu Dhabi National Oil Co (ADNOC) 60%, Abu Dhabi Petroleum Co 40%.

<sup>d</sup> BP 50%, other partners 50%.

<sup>e</sup> Sultanate of Oman 60%, Partex (Gulbenkian Foundation) 2%, Total 4%, Royal Dutch Shell 34%.

<sup>f</sup> Sibneft was acquired by Gazprom in 2005.

<sup>g</sup> Itera (Russian Federation) 15.25%, Gazprom 61%, other partners 23.75%.

<sup>h</sup> Partex (Gulbenkian Foundation) 5%, ExxonMobil 23.75%, BP 23.75%, Total 23.75%, Royal Dutch Shell 23.75%

<sup>i</sup> ExxonMobil 50%, Royal Dutch Shell 50%.

<sup>j</sup> Inpex Holdings is owned by the Ministry of Economy, Trade and Industry of Japan (29.3%) and other partners (70.7%).

<sup>k</sup> TNK-BP 50%, Gazprom 40%, ENI 10%.

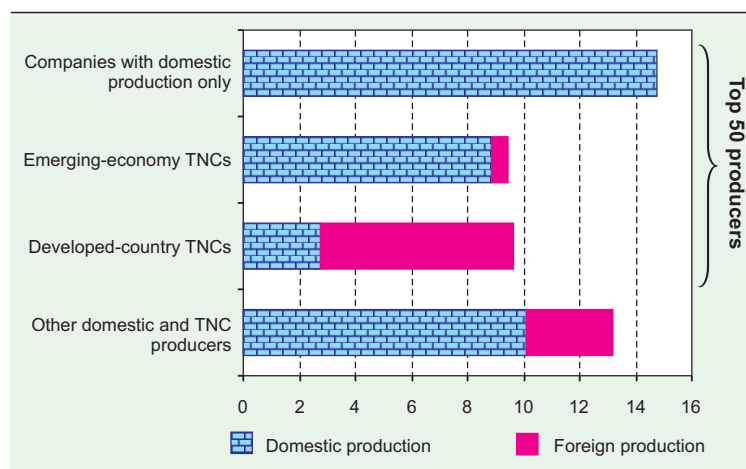
<sup>l</sup> TNK-BP 82%, Other partners 18%.

**Table IV.9. The world's largest oil and gas service TNCs, ranked by foreign assets, 2005**  
(Millions of dollars and number of employees)

Rank	Corporation	Country	Foreign assets	Total assets	Foreign sales	Total sales	Number of employees
1	Schlumberger	United States	11 272.0	17 746.0	10 436.0	14 309.0	60 000
2	Halliburton	United States	6 562.4	15 048.0	15 339.0	21 007.0	106 000
3	Aker	Norway	5 159.0	8 131.2	6 297.5	9 172.6	37 000
4	Weatherford International	United States	4 587.9	8 580.3	2 724.0	4 333.2	25 100
5	Transocean	United States	4 437.0	10 457.2	2 244.0	2 891.7	9 600
6	Noble Corp.	United States	3 208.1	4 346.4	1 067.3	1 382.1	5 600
7	Pride International	United States	2 950.9	4 086.5	1 766.9	2 033.3	12 200
8	Globalsantafe Corp.	United States	2 754.6	6 193.9	1 583.7	2 263.5	5 700
9	Nabors Industries	United States	1 755.3	7 230.4	1 169.5	3 459.9	22 599
10	EnSCO International	United States	1 603.6	3 614.1	620.1	1 046.9	3 700
11	Petroleum Geo Services	Norway	1 333.6	1 693.7	850.3	1 142.7	5 130
12	Diamond Offshore Drilling	United States	1 023.9	3 606.9	552.6	1 221.0	4 500
13	Acergy	Luxembourg	903.4	1 377.7	1 386.6	1 396.2	..
14	Prosafe	Norway	886.8	1 058.3	254.2	282.1	665
15	Rowan Companies	United States	627.6	2 975.2	142.9	1 068.8	4 577
16	BJ Services	United States	518.7	3 372.4	1 423.0	3 243.2	13 600
17	Abbot Group	United Kingdom	433.0	966.1	330.5	647.2	4 759
18	Ensign Energy Services	Canada	336.7	1 303.2	516.8	1 301.8	8 500
19	Smith International	United States	312.0	4 055.3	3 058.3	5 579.0	14 697
20	Complete Production Services	United States	92.3	1 121.7	147.8	757.7	..

Source: UNCTAD, largest TNCs database.

**Figure IV.9. World production of oil and gas, by types of companies, 2005**  
(Billion barrels of oil equivalent)



Source: UNCTAD, based on data from IHS.

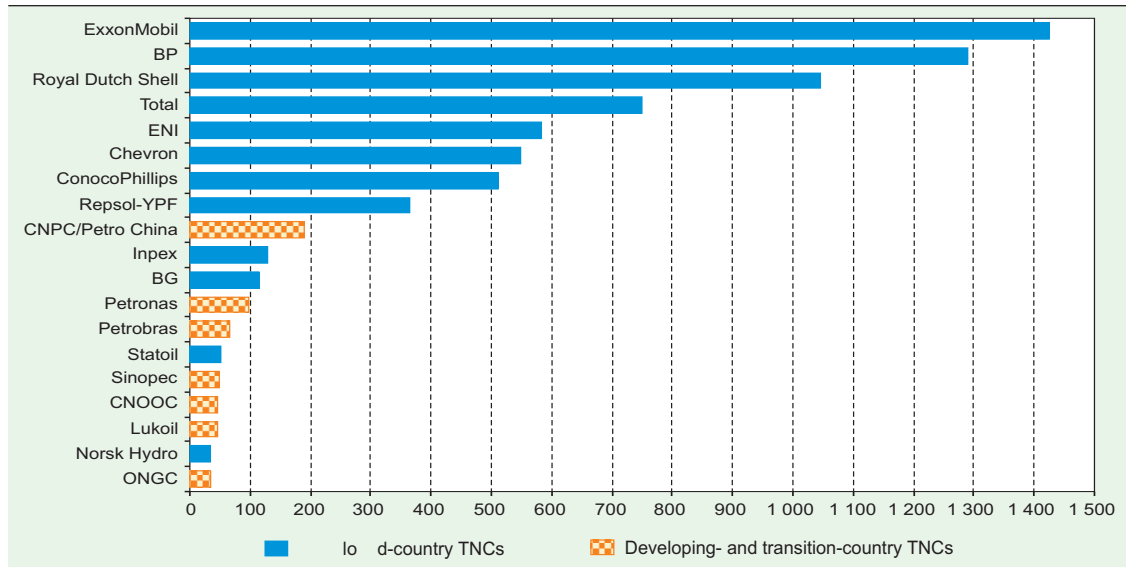
as Ecuador. CNPC has also invested jointly with local firms in countries such as the Islamic Republic of Iran, Sudan and Venezuela, while Sinopec has invested in Colombia and the Russian Federation (table IV.10).<sup>39</sup>

A few State-owned oil TNCs, in particular from China and India, have invested in some host countries which large private oil companies may have difficulty entering. Such difficulties are due to sanctions imposed on them by individual countries or to other pressures on companies to divest. That is true not only for the above-mentioned projects in Uzbekistan<sup>40</sup> and the Islamic Republic of Iran,<sup>41</sup> but also in Sudan, which is under United States sanctions

on international human rights grounds due to the conflict in the Darfur region (Canning, 2007: 57).<sup>42</sup> Sudan accounts for a significant share of the foreign oil reserves exploited by Chinese companies, and CNPC's upstream and refining investments in Sudan are by far the company's largest overseas venture.<sup>43</sup> ONGC and Petronas also have extraction operations in Sudan,<sup>44</sup> whereas CNPC and Petronas, as well as ENI and Total, are present in the Islamic Republic of Iran (table IV.10).

Historically, developed-country TNCs have controlled the value chain, especially due to their dominant position in technology, transportation and distribution networks (Accenture, 2006: 13). However, in the past few years, that situation has changed somewhat. Developed-country TNCs no longer dominate technical project management, which is often outsourced to specialized service companies. That development has helped the local State-owned partners to increase their technological independence in that they can now hire service companies directly, without the intermediation of the traditional majors (Accenture, 2006). Moreover, some transition-economy oil and gas firms, especially Russian TNCs, have invested in several overseas downstream projects with a view to controlling distribution channels linked to those activities. The best-known examples are those of Gazprom's pipeline and distribution projects

**Figure IV.10. Oil and gas production of selected TNCs outside their home country, 2005**  
(Millions of barrels of oil equivalent)



Source: UNCTAD, based on data from IHS.

#### Box. IV.5. Examples of outward expansion of oil and gas TNCs from developing and transition economies

- Petrobras had production affiliates in 8 host countries in 2005, and exploration and downstream activities in 10 other locations (Ma and Andrews-Speed, 2006).
- Activities of Chinese State-owned oil companies, involving exploration, production, transportation, refining and service contracts, are spread over 46 countries, mostly developing ones (Ma and Andrews-Speed, 2006).<sup>a</sup> As for Chinese TNCs, while CNOOC was not successful in its bid for Unocal (United States), it has assured major contracts in other developed countries, such as Australia and Canada (*WIR06*: 58).
- ONGC Videsh (India) has focused especially on oil production in the Russian Federation (Sakhalin 1 project), while Indian Oil Corporation invested in the Libyan Arab Jamahiriya in 2004-2005.<sup>b</sup>
- In the Republic of Korea, State-owned KNOC has taken the lead in overseas oilfield development projects. As of June 2006, it was taking part in 26 oilfield development projects in 14 countries. In 2006, it expanded into Australia, Kazakhstan, Nigeria, the Russian Federation and Yemen (Republic of Korea, MOCIE, 2006).
- Petronas' (Malaysia) international expansion began in the 1990s. In its early phase, the company focused more on upstream activities in neighbouring South-East Asian countries. It first moved downstream and outside the region in 1996, when it acquired a South African refiner and player in a petrol station group (Jayasankaran, 1999). Subsequently, since the late 1990s, it has focused its overseas push on explorations in Africa<sup>c</sup> and West Asia (Islamic Republic of Iran), as well as being involved in pipeline construction and retailing worldwide (e.g. China, India, Argentina, South Africa, Sudan and the United Kingdom). As of March 2007, Petronas had a presence in 33 countries abroad (Pananond, 2007), including 11 main production locations.
- The overseas expansion of Russian oil and gas TNCs serves to secure access to markets, especially developed-country markets, through downstream integration. They also have important upstream exploration and extraction activities in various members of the CIS or in developing countries with long-standing historical links with the Russian Federation. Many of these exploration and extraction rights have been inherited from the pre-transition period. In 2002, Lukoil, the largest privately owned oil TNC, derived about 5% of its production from fields abroad, including Kazakhstan and Uzbekistan (Vahtra and Liuhto, 2006: 28). State-owned Rosneft participates in foreign upstream ventures via intergovernmental deals in various CIS countries and Afghanistan.
- In the case of Thailand's State-owned PTT, its interest in overseas expansion started only in the late 1990s, and was concentrated mainly in the South-East Asian region, although its exploration affiliate has started to venture into West Asia and Africa. PTT is also taking the lead in a future trans-ASEAN gas pipeline project (Crispin, 2004).

Source: UNCTAD.

<sup>a</sup> By the end of 2005, CNPC alone owned oil and gas assets in 23 countries, including 12 main production locations.

<sup>b</sup> In 2005 and 2006, ONGC Videsh made nine acquisitions abroad: in Cuba, Egypt, the Libyan Arab Jamahiriya, Myanmar, Nigeria, Qatar, the Syrian Arab Republic and Viet Nam. With these acquisitions, the company had a presence in 21 projects as of 31 March 2006, including one pipeline project (Jain, 2007).

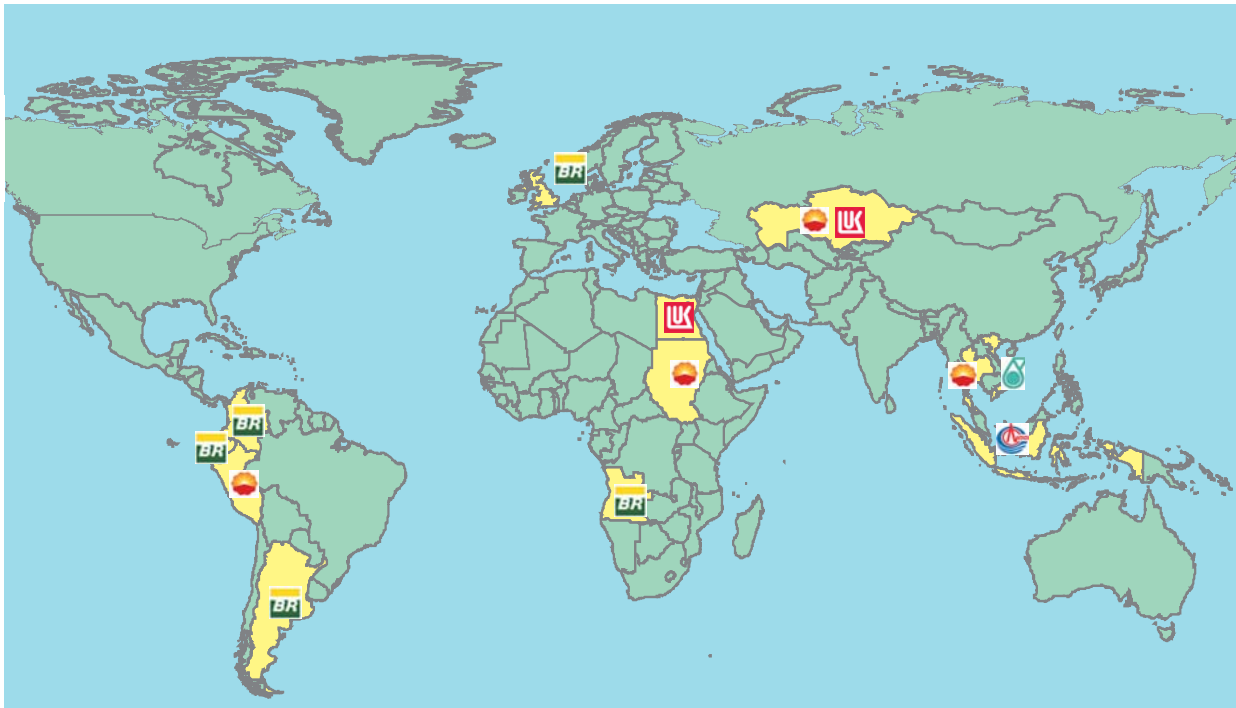
<sup>c</sup> Sudan (1999), Gabon (1999), Chad (2000), Cameroon (2000), Algeria (2001), Mozambique (2002), Ethiopia (2003) and Niger (2005).





Figure IV.11. Selected foreign production locations of oil and gas TNCs, 1995 and 2005

1995



2005



China

India

Brazil

Malaysia

Russian Federation

CNOOC CNPC/PetroChina SINOPEC

ONGC

Petrobras

Petronas

Lukoil

Source: UNCTAD, based on data from IHS.

in Western Europe, as well as Lukoil's expansion into the gas station business in Western Europe and the United States (Vahtra and Liuhto, 2006: 28-29; *WIR99*: 89; *WIR01*: 119).<sup>45</sup> Developing-country firms that have invested in overseas projects include Saudi and Kuwaiti State-owned oil companies that have partnered with the Chinese firm, Sinopec, in two separate refining and petrochemical ventures in China (Tan, 2006).

## C. Drivers and determinants

Although traditional explanations of FDI and international production generally apply also to the extractive industries, at least three special features of resource extraction should be kept in mind (chapter III). First, most investments in extractive industries are capital-intensive and risky, with long gestation periods. Therefore, companies need to be financially strong and able to manage a high degree of risk (Vernon, 1971). Secondly, more than other industrial activities, mineral extraction can engender considerable environmental and social impacts that investors need to address. Thirdly, as some mineral resources, notably oil and gas, are regarded as strategically important to countries, motivations other than purely economic ones often influence investment decisions.

Drivers and determinants of investments by TNCs in extractive industries differ between various stages in the value chain, and between industries and companies. This section discusses the motivations and determinants of FDI and TNC activities in extractive industries, with particular attention to the diverging patterns in the oil and gas and the metal mining industries, and to the rise of extractive-industry TNCs based in developing and transition economies. The analysis is structured according to the factors motivating the internationalization of production by firms, and ownership, internalization and locational advantages that determine whether and where TNCs engage in international production activities.

### 1. Motivations for internationalization

The motivations for extending production activities in extractive industries across national boundaries can be grouped into resource-seeking, market-seeking, efficiency-seeking and strategic-asset-seeking (Dunning, 1993 and 2000; *WIR98*).

*Natural-resource-seeking* motives dominate FDI and other forms of TNC involvement in upstream (exploration and extraction) activities. A TNC may seek resources for three reasons: to

meet the needs of its own downstream refining or manufacturing activities, to sell the minerals directly in host, home or international markets, or to secure the strategic requirements of energy or other minerals for its home country (as formulated by the country's government). The first reason has been important historically for petroleum production, but less so after the nationalizations of oil and gas extraction and refining industries and with the development of new commodity exchanges (which provide opportunities for spot transactions, as well as futures and options trade). However, it remains important for vertically integrated TNCs in metallic minerals. The second reason has driven the overseas expansion of most privately owned extractive TNCs and some State-owned oil companies, such as Petrobras, Petronas and Statoil. The third reason explains overseas expansion in extractive activities by both privately owned and State-owned TNCs.

Recently, the growing demand for various minerals has been a key driver of the overseas expansion of State-owned TNCs from Asia (Hoyos, 2007; Gardiner, 2006; Zweig and Bi, 2005). For example, the Government of India has mandated its State-owned oil companies to secure stakes in overseas oil deposits. ONGC Videsh has an objective of acquiring the equivalent of 60 million tonnes of oil per year by 2025, which corresponds to a tenfold growth over its 2006 level (Mitchell and Lahn, 2007: 3). KNOC is expected to increase the share of its foreign production from 4% of the total crude oil imports into its home economy in 2005 to 35% by 2030 (Mitchell and Lahn, 2007: 3). China's "going global" strategy outlined in 2000 is among the most explicit recent policy initiatives taken to boost FDI overseas (*WIR06*: 209-210).<sup>46</sup>

*Market-seeking* motives are generally of limited importance for exploration and extraction activities, but figure among the drivers of investment in overseas downstream activities. This applies, in particular, to companies based in mineral-rich countries, such as Kuwait, the Russian Federation and Saudi Arabia. These primarily upstream-based firms strengthen their market position largely by moving to downstream markets and capturing the value added associated with the production and sale of finished products (Baker Institute, 2007: 4). Increased control over downstream activities also offers the strategic advantage of securing long-term demand in consumer markets. In addition, since relative profits between upstream and downstream activities may vary over time, vertical integration allows a firm to diversify, which helps mitigate risk.

*Efficiency-seeking* motives are relevant for investments in the processing or early metal-manufacturing stage, where TNCs seek to exploit

differences in costs of production between countries. They are sometimes combined with market-seeking motives, especially when transportation of the product is difficult or costly. In the case of refining, minimizing the costs of transportation may justify processing close to the source of the minerals, while considerations of access to markets and maximizing the scale of production may prompt locating it closer to the consumer (Tavares et al., 2006).

*Strategic-asset-seeking* motives can be linked especially to the rise of cross-border M&As by TNCs in the extractive industries. Companies may invest to acquire strategic assets in the form of know-how and technology from other companies or from specialized technology providers, or to speed up their rise to global status by accessing the resources, capabilities and markets of the acquired firms. Such motives may therefore be especially important for new TNCs from emerging market economies that are eager to develop their competitive assets rapidly (Dunning and Narula, 1996; *WIR06*; Jain, 2007). Finally, preemptive motivations may be at play as firms seek to merge with a competitor to eliminate competition and erect barriers against others, and to strengthen their global positioning (Caves, 1971; Vernon, 1971; *WIR00*).<sup>47</sup>

Strategic considerations relating to home economies may play a more direct role in FDI by new TNCs from developing and transition economies – many of which are State-owned – than in FDI by traditional TNCs. In the former cases, home governments may influence corporate motives and strategies, resulting in the extracted raw materials going directly to home countries rather than entering international markets. This may result in implicit restrictions on the end destination imposed by a given home country (Nitzov, 2007). In addition, as in the case of Russian TNCs, the State may encourage a process of international expansion with the aim of increasing control over downstream markets (Vahtra and Liuhto, 2006).

## 2. Determinants of TNC activity

### a. Ownership-specific advantages

As in other economic activities, TNCs in extractive industries rely on some kind of competitive advantages when they undertake FDI or expand internationally by means of other contractual forms (Dunning, 1993 and 2000). These “ownership” advantages may derive from privileged access to capital, technology, superior organization and management know-how, size and/or the common

governance of several parts of the value chain. They may also be linked to such institutional assets as corporate culture, leadership or management diversity, or privileged access to home or host markets, or benefit from having a presence in many different markets. Some ownership advantages may be firm-specific (such as proprietary technology, or management and organizational skills), while others are linked to particular features of the home country (such as access to finance and risk-reducing instruments). Home-country specific advantages can also include physical infrastructure, the innovatory system or educational facilities, which may be unique to a country and internalized by its TNCs.

One of the main firm-specific advantages for both traditional and new TNCs vis-à-vis domestic firms in a host country is their access to finance. For large and capital-intensive extraction projects, financial strength and sheer size are particular assets of major TNCs, which often have internally generated funds to draw upon. For example, in iron ore production for export, only the very largest companies have the potential to invest in the infrastructural installations (e.g. railways, ports and handling systems) needed to compete in the global market. In this segment, the three top companies (CVRD, Rio Tinto and BHP Billiton) control 74% of the world market.<sup>48</sup> Even with respect to alternative sources of finance, such as borrowing and raising funds through stock markets, traditional TNCs may be in a privileged position in terms of their ability to raise funds. Their long experience with similar projects combined with the expertise required may make lenders and investors more willing to financially support one of their projects, rather than one implemented by firms newly venturing into production abroad.<sup>49</sup>

With some important exceptions, proprietary technology is of limited importance as an ownership-specific advantage for the internationalization of most extractive-industry firms. The technologies used in most oil and gas extraction and metal mining operations are relatively well known today, and can be obtained in the market from specialized providers. However, for certain technologically advanced projects – as in the case of very deep offshore oil-drilling, liquid natural gas extraction, unconventional oil and alternative energy projects – specialized know-how and expertise constitute key firm-specific assets for some TNCs. Some new contenders, including Petrobras and Petronas, have managed to develop world-class capabilities in deep offshore exploration. While proprietary technology may be of limited importance as an ownership-specific advantage for firms in extractive industries, expertise in terms of the ability to manage long-term projects

and associated risks is critical.<sup>50</sup> Such management and organizational practices and skills are developed within firms, often over long periods of time. Even if, in principle, technology can be acquired from external sources, it takes specialized know-how to make use of it in an effective way.

Access to markets (due to name recognition worldwide and goodwill in home countries) and to transportation and distribution channels are other potentially important ownership advantages, particularly in oil and gas extraction (Accenture, 2006). In the past, it was one factor behind FDI in oil exploration and extraction by some developed-country TNCs that began as distributors of imported oil (Yergin, 1991). Traditional TNCs still have a strong position in downstream industries. Countries with high petroleum demand tend to have large refinery capacities.<sup>51</sup> As of January 2005, 89% of the world's crude oil refinery capacity was located in non-OPEC countries. At the same time, the fastest growing markets for petroleum products are in emerging market economies, thus giving the new contenders (e.g. those from China and India) a potential advantage (Accenture, 2006).

The financial strength of TNCs is sometimes linked to home-country institutional arrangements. For example, large State-owned TNCs, such as those based in China and India, derive advantages from access to subsidized finance and investment insurance when investing abroad (*WIR06*). Financial backing by their home countries can enable them to assume greater risks when investing abroad and they could also be willing to pay more to access mineral resources. A new record in signature bonuses was reached in 2006 when Sinopec, outbid its competitors by paying a \$2.2 billion signature bonus in return for the right to explore for oil in two Angolan blocks.<sup>52</sup> Chinese oil TNCs have also appeared to be more willing to invest in non-core business to secure control over production. For example, in a licensing round in Nigeria in May 2006, CNPC was awarded four oil exploration and extraction licences in return for agreeing to invest around \$4 billion to revamp a refinery and construct a hydro power plant and a railway line in that country (Mitchell and Lahn, 2007).<sup>53</sup>

There may be several reasons why these State-owned TNCs are able and willing to pay more than traditional TNCs for access especially to oil and gas reserves abroad (Mitchell and Lahn, 2007).<sup>54</sup> They may incur lower costs of capital, because interest rates in their home base are lower than in other markets. The State as a shareholder may require fewer or no dividends from them if it places a strong emphasis on energy security. In some cases, there may be direct government participation in financing the projects by

way of export credits, subsidized loans or investment guarantees.

But State ownership can also be a disadvantage. Many State-owned companies in the extractive industries have been used as milking cows by their owners (governments), with too few funds left to undertake reinvestments (Radetzki, forthcoming). Even the world's largest copper producer, Codelco, has at times found it difficult to reconcile the expectations of its owner with the need to develop its production capacities. The policy of transferring all corporate profits to the State has meant that investments by Codelco had to be financed from the depreciation allowance of the company and from debt.<sup>55</sup> In oil and gas, Mexico's State-owned Pemex was reported to have paid \$54 billion in taxes and royalties in 2006 alone, accounting for nearly 40% of government revenues. As a result, it reported losses (after taxes) over the period 2000-2005, and showed only \$3.9 billion in net profits in 2006 – despite high oil prices – compared with sales of \$97 billion.<sup>56</sup> Loss-making has led to underinvestment in exploration.<sup>57</sup> Such cash-stripped companies generally have a slim chance of expanding internationally.

### **b. Internalization advantages**

International vertical integration aimed at controlling the trade or supplies of raw materials has traditionally been a major feature of both oil and gas and metal mining TNCs (Morse 1999; Vernon 1971), especially in times of high demand and high mineral prices (Caves, 1971; Hennart, 2000; Jones, 2005; Williamson, 1990). These strategies have been related to the minimization of transaction costs. However, the degree of internalization has diminished over time, partly as a result of nationalizations (Radetzki, forthcoming). Especially in the oil and gas industry, internalization and vertical integration have been hampered by restrictive host-country policies. Some oil-rich host countries prohibit TNC participation in oil and gas exploration and others allow TNCs to participate only under various contractual arrangements with State-owned local partners (chapter VI). The main reason for these restrictions is the desire of host country governments to control the production of oil and gas, which are perceived to be strategic energy resources, and from which resource rents can be very high.

### **c. Locational advantages**

As in other industries, extractive-industry TNCs decide where to invest abroad based on three broad locational factors: the economic characteristics of a location, the general policy environment of potential host countries, and the extent of business



facilitation versus legal restrictions in the given economic activity (*WIR98*).

The existence and extractability of natural resources are the most important *economic* determinants of where TNCs invest in mineral exploration and extraction. While the (likely) presence of mineral deposits is a necessary requirement to attract resource-seeking investment, it is not a sufficient condition. Many developing countries that are endowed with metallic minerals have traditionally been unable to attract FDI. For companies to be willing to engage in exploration and or extraction, they need to assess whether the volume and quality of minerals are likely to be sufficient to make an investment profitable. This requires, among other things, access to basic geological data. If the chances of finding significant deposits are perceived to be promising, a company will consider the expected risk-return ratio: the higher the risk, the greater the expected return has to be for it to invest. It also takes into account the political, environmental and social risks. However, as noted above, the willingness to take risk and the assessment of risk differ considerably between companies.

In addition to the legal and regulatory systems that determine in particular whether and in what form TNCs are allowed to invest in exploration and extraction. The overall macroeconomic and political environment is also generally of high significance for all forms of investment. The importance of policies and institutions as locational determinants was confirmed in a survey of 39 mining TNCs and factors influencing their investment decisions (Otto, 1992). Out of the 20 highest ranked criteria, all but two (geological potential and measure of profitability) were in one way or another related to government policies or regulatory systems. The top ten among them, ranked by importance attached to them by TNCs, were: security of tenure; ability to repatriate profits; consistency and constancy of mineral policies; management control; mineral ownership; realistic foreign-exchange regulations; stability of exploration and extraction terms; ability to predetermine tax liability; ability to predetermine environment regulations; and the stability of fiscal regime.

Extractive-industry TNCs need to be able to combine the availability of resources with access to good physical infrastructure (ports, roads, power, and telecommunication). The importance of supporting infrastructure varies by project, however. A gold mine may be easier to develop even when basic physical infrastructure is weak, as its output can be transported by air. By contrast, an iron ore mine requires well functioning roads and ports to be economically feasible.

Investments in the processing stage of extractive activities are determined to a lesser extent by the availability of mineral deposits, although some refining and smelting activities may benefit from close proximity to a mine. Access to inputs needed in the refining process play a major role. For example, in the aluminium industry access to cheap energy is valuable and locations that offer opportunities for energy generation (e.g. rivers) are preferred for refining plants. The need for cheap energy is also a factor encouraging integration of TNC activities in the extractive industries with the energy business of host countries (Stuckey, 1983; Whiteway, 1996).

## D. Conclusions

This chapter demonstrates that significant changes are under way in the extent and nature of TNC involvement in extractive industries. Some of its findings can be summarized as follows:

- While extractive industries account for a small share of global FDI, they constitute the bulk of inward FDI in a number of low-income countries.
- The boom in mineral prices has fuelled a rise in global investments in both the metal mining and oil and gas industries. Indeed, those industries account largely for the recent increases in FDI in Africa, Latin America and the CIS. The boom has similarly triggered a series of cross-border mega mergers in these industries, resulting in higher levels of market concentration.
- The extent and nature of TNC involvement vary considerably between the metal mining and the oil and gas industries. In the former, widespread nationalizations in the 1960s and 1970s were in most cases subsequently reversed through liberalization and privatizations. As a result, major privately owned TNCs today dominate the global production of metallic minerals. Conversely, the nationalizations of the oil and gas industry permanently changed its structure, and companies with majority State ownership are now the dominant producers. This trend has been accentuated over the past decade.
- Despite the global dominance of majority State-owned companies with a strong focus on domestic production, in a number of countries foreign affiliates of TNCs play a significant role in oil and gas extraction. In several African countries, for example, they account for well over 50% of domestic production. In metal mining, as well, foreign affiliates account for a particularly large proportion of the production of low-income countries.



- A distinct feature of the global extractive industries in the past few years has been the rise of outward FDI from the emerging market economies, a trend that was also highlighted in the *WIR06*. This has been driven particularly by TNCs from selected Asian economies, such as China, India, Malaysia and the Republic of Korea, but also by Brazilian, Kuwaiti and Russian companies. Whereas the trend towards more South-South investment is the most visible in oil and gas, similar developments have also been observed in metal mining.
  - With few exceptions, these new TNCs remain under State control. Although their level of internationalization is understandably much lower than the traditional, privately owned oil and gas majors, a number of them are moving rapidly to gain an international foothold in different oil and gas projects.
  - The expansion of State-owned TNCs from China and India stems from the rising energy demands of their fast growing economies. They are actively seeking to secure access to foreign energy supplies through equity investments in oil and gas extraction projects. Backed financially as well as politically by their respective governments, a key objective for them is to expand production for export to their home economies.
  - In both the oil and gas and the metal mining industries, a number of specialized service providers have emerged. For example, in metal mining in 2005, specialized “junior” exploration companies for the first time reported greater exploration expenditures than the major mining companies. Similar developments have occurred in oil and gas. As a result of greater specialization, there are new opportunities to source services from specialized companies. Nevertheless, many countries prefer to involve TNCs in exploration projects, especially in metal mining, but also for technologically difficult oil and gas projects. TNCs remain a major source of financial resources, management skills and sometimes technology, besides providing access to markets.
  - The interaction of TNC strategies and government policies is instrumental in shaping the ownership and production structures in the extractive industries (chapter VI). Given the continued high levels of mineral prices (chapter III), it is likely that the intense investment activity will be sustained for some time as companies seek to meet the high level of demand.
  - TNCs in extractive-industries invest overseas for the same three broad reasons as TNCs in other industries: the economic characteristics of the location, the policy and institutional framework of the potential host country, and the impact of either legal restrictions or business facilitation on the conditions of entry and operations. In the exploration and production stages, such locational decisions are determined first and foremost by the availability of extractable resources, and the quality of the physical infrastructure such as ports, roads, power and telecommunications. In processing activities, investments are more market-seeking and efficiency-seeking, and depend less on the location of natural resources and the evolution of their prices. The locational decisions of such firms, like those of firms in manufacturing or services, are influenced more by factors such as availability of infrastructure, cheap energy and access to markets, as well as proximity and access to markets. In all stages of natural-resource-based activities, government policies and institutions have a major influence on locational decisions (chapter VI).
- Taken together, the recent changes in extractive industries have resulted in a more multifaceted TNC universe that continues to change in dynamic ways and on different trajectories, depending on the mineral, region and country. These dynamics raise questions about their impact on developing countries – an issue addressed in the next chapter.

## Notes

- <sup>1</sup> In oil and gas, majority State-owned firms are commonly referred to as “national oil companies”. In line with the definitions of FDI and TNCs, “national oil companies” that invest abroad are thus included in the universe of TNCs.
- <sup>2</sup> This Report draws on statistics from UNCTAD’s FDI/TNC and cross-border M&A databases ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics)), as well as unpublished data provided by IHS (<http://www.ihs.com>) and the Raw Materials Group (<http://www.rmg.se>) (on oil and gas, and metal mining, respectively).
- <sup>3</sup> In 1914, more than half of the outward FDI stock of the United Kingdom was reported to be in resource-based industries (Houston and Dunning, 1976), mainly extractive, of which most was located in developing countries (Corley, 1994). Similarly, more than half of the United States FDI stock was concentrated in resource-based industries in developing countries (Wilkins, 1970).
- <sup>4</sup> In 2005 the Netherlands replaced the United Kingdom as the number one source of extractive-industry FDI. This change in ranking was prompted partly by the reorganization of Royal Dutch Shell, mentioned in box IV.1.
- <sup>5</sup> At the end of 2005, 15% of China’s outward FDI stock (\$9 billion) was in mining (UNCTAD, FDI/TNC database ([www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics))).
- <sup>6</sup> In oil and gas, as of June 2006, companies from the Republic of Korea were involved in 72 projects in 28 countries worldwide. Asia and Oceania (excluding West Asia) were the leading destinations (22%), followed by North America (21%) and Latin America and the Caribbean (21%). A survey of 35 mineral-resource-related companies in the Republic of Korea forecasts that their investments in overseas mineral resource development will reach \$3.7 billion in 2007 (Republic of Korea, MOCIE, 2006).
- <sup>7</sup> Other large-scale acquisitions included Goldcorp’s (Canada) purchase of Glamis Gold (United States), Sinopec’s 49.9% stake in Udmurtneft, CNOOC’s investment in Nigeria, Royal Dutch Shell’s acquisition of BlackRock Ventures (Canada), and CITIC’s (China) acquisition of Nations Energy (Canada) (annex table A.IV.4).
- <sup>8</sup> In the period 1960-1969, petroleum and other mining together represented an average of 45% of the total number of expropriations by developing-country States. This proportion rose to 62% in 1970-1976 (UNCTC, 1978: 14-18).
- <sup>9</sup> Examples include Zambia (copper), Ghana (gold), Peru (base metals and oil), Argentina and Bolivia (base metals and oil) and the Russian Federation (oil in the early 1990s).
- <sup>10</sup> In terms of inflows, the share of developed countries fell somewhat: from 74% in 1989-1991 to 78% in 2003-2005 (annex table A.I.11).
- <sup>11</sup> For example, in 2005, the FDI stock in the extractive industries of those countries was \$36 billion, higher than the stock in a traditional mining country, South Africa (\$27 billion) (annex table A.I.9).
- <sup>12</sup> In 2004, the share of oil and gas exceeded 60% of total FDI inflows in Angola, Egypt, Equatorial Guinea and Nigeria and that industry has also accounted for the largest share of FDI in Algeria, the Libyan Arab Jamahiriya and Sudan in recent years (*WIR05*).
- <sup>13</sup> FDI in oil and gas increased sharply in Colombia and Ecuador in 2005; and in Venezuela, it amounted to \$1 billion. It also increased in Argentina and Trinidad and Tobago in 2004 (the most recent year for which their data are available). FDI in metal mining was buoyant in Argentina, Chile, Colombia and Peru (*WIR06*). In Bolivia, uncertainties surrounding the implementation of its restrictive new 2005 law relating to oil and gas led to a fall in FDI (*WIR06*: 71-72).
- <sup>14</sup> In Venezuela in 2006, the Government transformed the risk service contracts of foreign companies into joint ventures with its State-owned petroleum company, *Petróleos de Venezuela* (chapter VI).
- <sup>15</sup> In Saudi Arabia, the three contracts with foreign firms have been signed under the Gas Investment Law of 19 September 2003. These contracts are currently categorized as “surface exploration” rights (information provided by IHS).
- <sup>16</sup> Only a few world-class State-owned companies remain today, such as Codelco (Chile) and LKAB (Sweden), or risky assets with only long-term potential, such as the remainder of Gécamines (the multi-metal mining company founded in the early twentieth century in the Democratic Republic of Congo), the aluminium industry of Venezuela and some Indian State-owned metal mining companies. In the CIS, only a limited production capacity remains under State control. In China, mining activities continue to be largely under the control of the central Government or regional or local public authorities. However, several partial privatizations and initial public offerings have successfully been carried out in Chinese metal mining firms in recent years.
- <sup>17</sup> The distinction between these companies and the medium-sized companies is somewhat arbitrary, mainly based on the fact that the latter usually focus on production at the mining stage only.
- <sup>18</sup> Data from the Raw Materials Group.
- <sup>19</sup> BHP Billiton and Anglo American are currently headquartered in developed countries. However, they have their roots in South Africa, where they were originally established and headquartered.
- <sup>20</sup> State ownership in 1995 played a more important role than in 2005 as governments at that time still held majority ownership in CVRD and KGHM Polska Miedz – shares that were reduced to minority holdings by 2005 – and the Russian Government owned 49% of Norilsk Nickel, a participation that was subsequently sold (see annex table A.IV.5).
- <sup>21</sup> For example, Anglo American is active in coal, copper, gold and nickel production, and BHP Billiton has interests in coal, copper, iron and nickel, as well as oil.
- <sup>22</sup> With the acquisition of Inco (Canada) in 2006, CVRD owns now foreign metal mining production, however.
- <sup>23</sup> Norilsk Nickel has however foreign production in gold.
- <sup>24</sup> Large internationalized firms figure in more than one top list: Anglo American is on the iron ore, copper, nickel and zinc top lists, BHP Billiton on the iron ore, copper and nickel top lists, and Rio Tinto on the iron ore, copper and gold lists. In turn, firms with no investment abroad such as CVRD and Codelco are single-metal specialists.
- <sup>25</sup> Over the period 1995 to 2005, *Norilsk Nickel* moved from a strong focus on mining to a vertically integrated approach. The capacity of the Norilsk nickel/copper refinery was increased from 93.8 to 127 kilotonnes, and that of Monchegorsk nickel/copper refinery from 86.3 to 116 kilotonnes. *BHP Billiton* started moving into vertical integration in 1995 with no control over mines or refineries. By 2005, it had vertically integrated 152 kilotonnes of mine production and 144 kilotonnes of refined production into its nickel value chain. This was achieved through the acquisition of Montelibano Nickel Complex (Colombia) and of WMC’s assets, including the Kwinana nickel refinery (Australia) and the Yabulu nickel refinery (Australia) (information from the Raw Materials Group).
- <sup>26</sup> Mittal Steel, which merged with Arcelor in early 2006, has gradually built a position among the top 10 iron ore producers by taking over fully integrated (often loss-making) steelworks. The company made acquisitions of this type over the period 2005-2006 in Algeria, Bosnia, Kazakhstan, Mexico, Ukraine and the United States. In South Africa, Mittal did not acquire ownership of the former Iscor mines, but made sure it had access to iron ore on a cost-plus basis. During 2006, Mittal also made its first investments into pure iron ore mines in Liberia and Senegal, although the latter transaction is being contested.
- <sup>27</sup> Severstal has integrated upstream into coal and iron ore mining within the Russian Federation, and is planning similar investments abroad.
- <sup>28</sup> “Steel mills trying to regain some control of input costs”, *MEPS Steel News*, 23 June 2006 (Sheffield, MEPS (International) Ltd.; accessible at: [www.meps.co.uk/viewpoint6-05.htm](http://www.meps.co.uk/viewpoint6-05.htm)).
- <sup>29</sup> Over the decade 1996-2005, their number fluctuated between 8 and 12, as some of the large oil and gas TNCs merged (reducing their number) and new ones entered the list.

- <sup>30</sup> According to Bakes Institute, 2007, they ranked 14th, 17th, 19th and 25th respectively among the oil and gas firms with the largest reserves worldwide.
- <sup>31</sup> In the Russian Federation between 1995 and 2005, State ownership increased from minority to majority in Gazprom, and decreased from majority to minority in Sibneft, Slavneft and Tatneft. It also decreased from a majority to a minority share in ENI (Italy) and Abu Dhabi Co Onshore Operator (United Arab Emirates).
- <sup>32</sup> Lukoil (Russian Federation), for example, is 100% privately owned.
- <sup>33</sup> "PetroChina announces A-share listing, boosts shares", *Interfax-China* (Shanghai), 20 June 2007.
- <sup>34</sup> "Monthly Energy Chronology - 2000" (Washington, DC, Energy Information Administration; available at: [www.eia.doe.gov/emeu/cabs/chrn2000.html](http://www.eia.doe.gov/emeu/cabs/chrn2000.html)).
- <sup>35</sup> In Saudi Arabia, policy-making and regulation are the prerogatives of the Ministry of Petroleum and Minerals, while operations are left to Aramco. Aramco has an independent financial structure, paying royalties and taxes to the State Treasury and dividends to its shareholders. It has been observed that this kind of independence of the financial and managerial structures increases the company's efficiency, allowing it to focus on its long-term goals without the risk that its strategy will be disrupted by a change of chief executive officer every time there is a change of government (Al-Naimi, 2004).
- <sup>36</sup> Excluding North America.
- <sup>37</sup> The new Seven Sisters are considered to be: Saudi Aramco (Saudi Arabia), Gazprom (Russian Federation), CNPC (China), NIOC (Islamic Republic of Iran), Petróleos de Venezuela (Venezuela), Petrobras (Brazil) and Petronas (Malaysia) (Hoyos, 2007).
- <sup>38</sup> Asian Development Bank, "Central Asia Regional News", *December 2005 Monthly Digest* (<http://adb.org/Carec/Central-Asia-News-Digest/2005/December-2005.pdf>).
- <sup>39</sup> ONGC (India) and Sinopec (China) in August 2006 jointly acquired a stake in Omimex de Colombia, owned by Omimex Resources (United States) ("ONGC, Sinopec buy half of Colombian oil company" (Houston, TX, Rigzone; accessible at: [www.rigzone.com/news/article.asp?a\\_id=35185](http://www.rigzone.com/news/article.asp?a_id=35185)). The joint purchase of the Syrian Al Furat Petroleum Co. and the joint Sino-Indian development of the Yahavaran oilfield in the Islamic Republic of Iran are two additional examples of partnerships (*Financial Times*, 13 January 2006; "BBC interviews CK on China-India trade talks, oil exploration," *China Knowledge*, 17 March 2006, <http://chinaknowledge.com/news-detail.aspx?id=2418>).
- <sup>40</sup> In 2005, the EU imposed sanctions on Uzbekistan due to human rights violations. These sanctions affect the arms trade directly, but all business transactions of European firms indirectly. See "Europeans set arms embargo to protest Uzbeks' crackdown", *New York Times*, 4 October 2005: A6.
- <sup>41</sup> Under the Iran-Libya Sanctions Act passed in 1996, the United States imposes sanctions on firms that invest \$20 million or more annually in oil and gas projects in the Islamic Republic of Iran (Katzmann, 2001). It thus hinders investments not just by United States TNCs, but also by companies with major business interests in the United States (Canning, 2007: 57).
- <sup>42</sup> The United States Executive Order 13067 "Blocking Sudanese Government Property and Prohibiting Transactions with Sudan" was issued on 4 November 1997 (see [www.clintonfoundation.org/legacy/110397-executive-order-13067-on-imposing-sanctions-on-sudan.htm](http://www.clintonfoundation.org/legacy/110397-executive-order-13067-on-imposing-sanctions-on-sudan.htm) for the full text).
- <sup>43</sup> The company holds a 40% stake in the Greater Nile Petroleum Operating Corporation, the biggest extractive venture in Sudan and has also invested in downstream operations.
- <sup>44</sup> "Oil-hungry China takes Sudan under its wing," *Telegraph online edition*, 23 April 2005, <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2005/04/23/wsud23.xml&sSheet=/news/2005/04/23/ixworld.html>; and Hoyos, 2006.
- <sup>45</sup> Gazprom has downstream equity investments in over 20 countries, including several EU member States, Turkey, and members of the CIS. In the CIS, the company is practically the sole supplier of natural gas (Vahtra and Liuhto, 2006: 28-29). Lukoil owns refineries in Bulgaria, Romania and Ukraine. It also possesses a retail network of some 1,000 gas stations in the CIS and Central and Eastern Europe. In addition to its acquisitions of firms in transition economies, Lukoil acquired Getty Petroleum Marketing in 2000, which controls 1,300 gas stations in the United States, and in 2004 it acquired an additional 800 stations from ConocoPhillips.
- <sup>46</sup> In October 2004, the National Development and Reform Commission and the Export-Import Bank of China issued a circular which established, as one of four priorities, the promotion of resource exploration projects to mitigate the domestic shortage of natural resources.
- <sup>47</sup> Gaining advantages of size and scale is one of the main drivers of M&As. In the oil industry the fluctuations in oil prices can be an added driver, leading to a wave of "mega mergers" as in the late 1990s (Stonham, 2000). For example, the merger of Exxon with Mobil enhanced the position of the newly formed company in Asia (Gilley, 1998).
- <sup>48</sup> Data from the Raw Materials Group.
- <sup>49</sup> In recent years, adherence to international social and environmental standards, such as those established by the Equator Principles, has also become a factor that financial institutions consider when financing projects (chapter VI, *WIR06*). In this context, the well-established TNCs may have an advantage over the new contenders.
- <sup>50</sup> The cost of off-the-shelf technology sourcing can be another factor holding back overseas expansion. Technologically less developed TNCs have to add the price of purchasing technology from outside providers to the full costs of their overseas expansion.
- <sup>51</sup> The United States has far more refinery capacity than any other country, with ownership of 149 of the world's 691 refineries (see "Non-OPEC Fact Sheet" (Washington, DC, Energy Information Administration, June 2005; available at: <http://www.eia.doe.gov/emeu/cabs/nonopec.html>).
- <sup>52</sup> See <http://www.globalinsight.com/SDA/SDADetail5873.htm>.
- <sup>53</sup> CNPC is involved in similar arrangements also in Algeria and Sudan, while ONGC has entered into similar agreements in Nigeria, and Petronas in Sudan (Mitchell and Lahn, 2007; Accenture, 2006).
- <sup>54</sup> See also Global Witness, *Oil Transparency 2007*; available at: [www.globalwitness.org](http://www.globalwitness.org).
- <sup>55</sup> Of the \$3 billion worth of investment over the period 1994-1999, 66% came from depreciation, and the rest from selling assets and contracting a debt of \$625 million ("Latin America: Beating the oil curse"; *Business Week* online, 4 June 2007; accessible at: [www.businessweek.com/magazine/content/07\\_23/b4037051.htm?campaign\\_id=nws\\_insdr\\_may25&link\\_position=link2](http://www.businessweek.com/magazine/content/07_23/b4037051.htm?campaign_id=nws_insdr_may25&link_position=link2)).
- <sup>56</sup> Ibid.
- <sup>57</sup> It has been estimated that if there is no new discovery of oil by 2017, Mexico may risk becoming a net oil importer (ibid).

# CHAPTER V

## DEVELOPMENT IMPLICATIONS FOR HOST COUNTRIES

Mineral endowments provide opportunities for economic development and poverty alleviation in the countries where they are located. As noted in chapter III, some of today's developed and developing countries have successfully leveraged their mineral resources for accelerating their development process. In other cases, the development impact of extractive activities has been and remains disappointing. In many developing and transition economies, TNCs play an important role in mineral extraction and related activities (chapter IV), and can therefore have a significant impact on the development of those countries. This chapter draws on available evidence to analyse their economic, environmental and social impacts on those countries. Although the different determining factors are intertwined, and counterfactuals are hard to construct, the chapter seeks to isolate TNC-specific impacts wherever possible. The analysis concentrates on upstream activities (i.e. exploration and extraction), but other parts of the value chain are also considered, as appropriate.

### **A. A framework for assessing implications for host countries of TNC involvement in extractive industries**

TNC involvement in extractive industries may have both positive and negative effects on a host developing economy. In exploiting their mineral resources, developing countries often face constraints, for example, with respect to capital and foreign exchange, technical and managerial capabilities, and access

to markets and distribution channels. TNC involvement may be a way for a country to at least partly overcome these constraints, leading to both direct and indirect economic gains. In addition, TNCs may contribute to higher levels of efficiency, productivity and innovation in the industries concerned. On the other hand, their activities may also generate or increase economic, environmental and social costs. By definition, foreign investment implies that a part of the value created will be allocated to the TNCs involved, and, by extension, to their home countries. Unequal bargaining power between large TNCs and governments may lead to less than optimal outcomes of negotiations for a host country, especially since the short-term profit maximization motives of the TNCs do not necessarily coincide with the longer term development objectives of a host country.

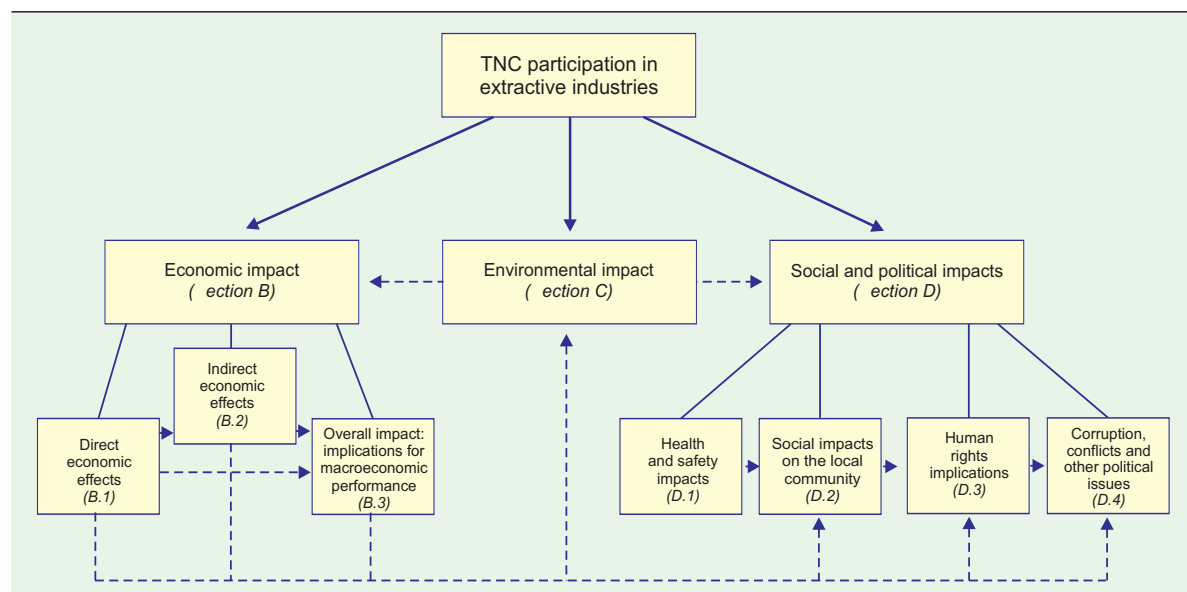
Figure V.1 sets out an analytical framework for assessing whether, and under what circumstances, TNC involvement may help developing countries exploit their natural resources in a way that promotes sustainable development. The economic, environmental and social benefits and costs are interdependent and mutually reinforcing.

Development impacts are context-specific and their assessment calls for a dynamic, historical perspective. The factors determining the impacts of an extractive-industry project, with or without TNC participation, can be specific to the industry, country or company. Many underlying causes of the net results are related to the nature of the extractive industries (chapter III); and there are significant differences between various types of extractive industries as well as between various stages in the value chain.





**Figure V.1. Development implications of TNC participation in extractive industries: an analytical framework**



Source: UNCTAD.

Country-specific factors include the magnitude and quality of mineral endowments, the size of the economy, the institutional environment, government policies and domestic capabilities. Firm-specific factors are related to the characteristics and activities of TNCs. The analyses in the sections below consider not only the effects on the host economy as a whole, but also the interests and concerns of various stakeholders, including central and local governments, local communities (including, in certain cases, indigenous peoples), labour and suppliers. Throughout, wherever possible, it seeks to consider different counterfactuals: extraction with TNC participation or no extraction; and extraction by TNCs or by domestic enterprises, as well as by different types of TNCs.

## B. Economic impact

TNC involvement in the extractive industries can have an economic impact at local and national levels. TNCs invest and participate in business activities at various stages along the value chain and in different forms (chapter IV). Their participation can make direct economic contributions (section B.1) and indirect ones (section B.2), and may also have significant implications for the overall macroeconomic performance of a host country (section B.3).

TNCs may help create value in the host economy directly through various equity or non-equity forms of involvement, and indirectly via linkages with, and spillovers to, other economic entities. Where local financial resources and

capabilities for undertaking the investment are lacking, TNC production represents a direct addition to output and income for the host economy; the significance of this depends on the size and nature of TNCs' local value-creating activities and their positioning along the value chain. Indirect effects depend on the extent of local procurement, forward linkages and various spillovers, as well as the multiplier effects of the income generated. Where domestic enterprises exist, the net outcome is also influenced by the impact on competition: whether domestic enterprises benefit from or are crowded out by the entry of TNCs. Compared with FDI in other industries, the limited scope for linkages between foreign affiliates and local firms in extractive industries may constrain TNCs' indirect contribution to local value creation. Thus the volume of value added and income created by foreign affiliates themselves strongly influence the overall economic impact. Equally, if not more important, the extent to which the value created is captured locally through taxes, wages and sometimes shared profits affects the net results of TNC involvement. For many developing countries, potentially the most important economic benefit of TNC activities in extractive industries is the generation of government revenues.

It is difficult to make generalizations about the economic impacts. They depend on the characteristics of the TNCs involved, as well as on the forms of TNC involvement – equity participation or a contractual arrangement, greenfield investments or cross-border M&As. Furthermore, there are significant differences between oil and gas and metal mining activities, between various minerals, and between investments at different stages of



the value chain. The scope for benefits is also influenced by various host-country factors. In terms of markets, increased production of minerals can either serve domestic markets, as in large emerging economies, such as China and India,<sup>1</sup> or it can target foreign markets, which is largely the case for other developing economies. The economic impacts at any given point in time are also affected by the international economic environment, notably global market conditions and commodity prices.

## 1. Direct economic effects

As in other industries, TNC participation in the extractive industries can increase financial resources for investment, improve management, transfer technology and enhance technological capabilities, generate employment and skills, and increase production and income in the host economy. It may also accelerate modernization and enhance the competitiveness of domestic industries. Moreover, often the most important direct economic contributions of FDI in extractive industries – more so than in other industries – are its promotion of exports and generation of government revenues. However, foreign participation implies that part of the total income generated will be captured by the TNCs involved; in some cases, their relatively strong bargaining power enables them to receive a significant share of this income (by negotiating particularly favourable contractual arrangements), and sometimes they may use transfer prices to reduce or avoid taxation.

### a. Financial contributions

Large-scale extractive activities are highly capital-intensive (chapters III). At the project level, for example, investment in Minera Escondida in Northern Chile totalled \$4 billion between 1991 and 2004 (ICMM/World Bank/UNCTAD, 2006),<sup>2</sup> and Petrobras' planned investments in offshore oil fields in the Gulf of Mexico over the next decade are expected to amount to \$15 billion.<sup>3</sup> At the country level, building an oil and gas industry or revitalizing a mining industry can cost many billions of dollars.<sup>4</sup> Only a limited number of companies in developing countries have the financial resources necessary to undertake such investments. Lack of funds can therefore constitute a substantial barrier to exploiting a mineral deposit. The participation of TNCs, with access to large-scale funding from internal or external sources, represents one way to overcome such financial constraints. Of course there may be other alternatives for accessing funds, such as borrowing in international financial markets or from intergovernmental development-finance

institutions, but funding from such sources may not be available to domestic enterprises in all countries.

The importance of TNC participation for raising the necessary financial resources and undertaking investment varies among extractive industries and countries. In the metal mining industry, years of underinvestment by State-owned enterprises following a wave of nationalizations in the 1960s and 1970s led many developing countries to return to a policy of attracting TNCs in order to halt a further decline of production and exports (chapter IV). This reopening to FDI has helped boost investment in a number of extraction activities. In Zambia, for example, FDI has been instrumental in rehabilitating the declining copper industry, initially through TNC takeovers of State-owned mines, and later through greenfield investments in new mines and post-privatization investments in acquired mines (UNCTAD, 2007m). In Ghana, foreign companies have invested over \$5 billion in new gold-mining projects since 1986. Similarly, in Peru, the FDI stock in metal mining rose from practically none in 1992 to \$3 billion in 2005, and 90% of the \$10 billion investment in the country's mining industry during the past 15 years has been by foreign TNCs.<sup>5</sup> The country's ranking in terms of reserves and production of a number of minerals, such as zinc and silver, has improved as a result of the increasing investment in exploration operations and production activities by TNCs.

In the oil and gas industry, State-owned oil companies have dominated investment and production in most oil-producing developing countries in West Asia since the oil nationalizations of the early 1970s (chapter IV). In other developing and transition economies, TNCs have been actively involved over the past decade, through concessions, joint ventures, production-sharing agreements and service contracts (chapters IV and VI). In countries such as Azerbaijan and Kazakhstan in the CIS, Angola, Equatorial Guinea and Egypt in Africa, Indonesia and Myanmar in Asia, and Ecuador and Peru in Latin America, foreign capital injected by TNCs has helped in the undertaking of various extractive projects. In Bolivia, during the 1990s, the lack of domestic funding was a major reason for the Government to privatize its national oil company, Yacimientos Petrolíferos Fiscales Bolivianos, which allowed the country to exploit deposits discovered earlier.<sup>6</sup> TNC investment in distribution infrastructure, such as pipelines, has also enabled developing and transition economies to enhance their exports of oil and gas.

In the past decade, the international expansion of TNCs from a number of developing countries has opened a new source of finance for extractive projects in other developing countries (chapter

IV). Many of these TNCs are State-owned, and are financially supported by their home-country governments, for example through export-import banks.

Financial constraints may be less of a problem for developing countries where State-owned mining enterprises have access to funds from their respective governments, and some of which have large and successful operations that generate profits, enabling reinvestment. A number of State-owned oil companies from developing countries and transition economies, such as CNPC and CNOOC (China), Petrobras (Brazil), PDVSA (Venezuela) and Rosneft (Russian Federation), have been successful in raising capital in international capital markets through bank loans or initial public offerings (IPOs).<sup>7</sup> However, significant technological and managerial capabilities and success in running profitable operations are necessary for such access to financial markets. In the case of Petrobras, for example, its excellence in offshore oil and gas exploitation technology opened the door to private financing for the development of a deposit in Brazil at the cost of \$4 billion (ECLAC, 2002: 155).

For poorer countries, the main alternative to turning to TNCs for capital has been to borrow from a development finance institution that is prepared to accept high-risk investments. As such opportunities are limited, many low-income developing countries that have used them to finance exploration (e.g. Equatorial Guinea, Guinea-Bissau and the United Republic of Tanzania) or midstream activities (e.g. an oil pipeline in Chad) have subsequently turned to TNCs for investment. In Latin America, the planned creation of Banco del Sur, a regionally controlled multilateral lender, may become a new source of finance for regional development, including for extractive industries.<sup>8</sup>

Large-scale extractive projects are today frequently based on multinational public-private partnerships, in which a group of governments and companies share varying degrees of control over the financing, exploration, production and marketing of mineral resources (Likosky, 2006). A foreign government may become involved in a project through an export credit agency which advances loans to a project company, as in the case of the Camisea project in Peru, the Baku-Tbilisi-Ceyhan project and the Chad-Cameroon pipeline project.<sup>9</sup> Intergovernmental organizations may also sometimes participate. For example, the Inter-American Development Bank is involved in the Camisea project, and the International Finance Corporation (IFC) is providing part of the financing for the Baku-Tbilisi-Ceyhan project and the Chad-Cameroon pipeline as well as for the Ahafo gold mine in Ghana. Sometimes the customers of

extracted minerals are also willing to participate in such consortia.

Different types of financing have different implications for economic development. In general, the greater the capabilities and competitive strength of a country's enterprises, private or State-owned, the more choice they have in accessing project financing. Developing countries with relatively strong domestic technological and managerial capabilities and a robust institutional structure can draw on national and international capital markets for funds to exploit their mineral resources, which allows them greater control. For countries with lower capabilities, an alternative is for the governments to borrow from development institutions. One feature of TNC-based financing is that it does not generate foreign debt for host-country governments. Instead, countries have to offer part of the resource rents in exchange for the participation of the TNCs. Such financing is usually more expensive than that from other sources, as the rate of profits of foreign firms normally exceeds the rate of interest on international loans (*WIR99*: 161). Meanwhile, a key advantage of TNC involvement in the financing of a mining project is that TNCs bring not only capital, but a bundle of additional assets, in the form of technology, management and other know-how, which are of particular value when domestic capabilities are scarce, and they can share the risks associated with various extraction-related activities.

### **b. Technology contributions**

For some extraction projects, access to technology and know-how can be a major reason for countries to rely on TNCs. While many metal mining projects involve mature technologies that are obtainable in the open market, not all countries possess the necessary skills and capabilities to make good use of them. Moreover, some projects – such as deep-water oil extraction or the production of liquefied natural gas – are technically challenging. This may explain why TNCs play a more important role in developing countries in the development of deep-water oil and gas deposits, while the richest, most easily accessible and profitable oil deposits – such as those in West Asia – tend to remain in the hands of State-owned oil companies (chapter IV). In addition, the transfer of technology – including proprietary technology that TNCs are often willing to provide only to their affiliates – and the strengthening of domestic technological capabilities are reasons why many countries seek to attract FDI into their extractive industries.

As in other industries, most of the innovation and technological development in the extractive

industries are undertaken by developed-country TNCs, generally in their home countries (*WIR05*). Because of their ownership-specific advantages (chapter IV), such TNCs bring knowledge and improvements in exploration and extraction techniques that may not otherwise be locally available. Developing countries that possess sufficient engineering expertise and technically competent State-owned oil companies (such as for example Saudi Aramco or Petrobras) have mostly relied on arm's length transactions for the acquisition of technology. Some of them have successfully developed the skills and knowledge required for the effective exploitation of their natural resources.

Even countries with sufficient expertise in the oil industry sometimes turn to TNCs for certain projects. State-owned companies often cooperate with TNCs in the development of oil and gas fields that are difficult to access, and for the extraction of heavy crude oil.<sup>10</sup> For instance, Kuwait turned to such firms for the development of oilfields in its northern region, which requires advanced technology and highly qualified personnel (Bahgat, 2000: 28). The Russian Federation, where indigenous enterprises have developed and applied many modern technologies, still relies on foreign expertise for the long-distance horizontal drilling capabilities needed to exploit the huge oil and gas reserves off Sakhalin Island. In Venezuela, the Government has involved TNCs in order to maximize production of the abundant deposits of extra-heavy crude oil in the Orinoco River basin.<sup>11</sup>

By bringing in advanced technology and managerial expertise, TNCs can potentially contribute not only to the establishment of new industries or activities that might not otherwise be developed, but also to improving efficiency in the short and long run in extractive and related activities. Technology spillovers from foreign affiliates to domestic companies are potentially important for the development of developing countries' indigenous technological capabilities. However, due to a lack of human, physical and institutional capacities to absorb them, such spillover effects often tend to be very limited in low-income countries, as are backward and forward linkages (*WIR99*; *WIR01*; section B.2.a). Where such deficiencies can be overcome, technology and managerial know-how can eventually spread to domestic companies through various channels. In China, for example, the development of CNOOC's technological capability in offshore oil exploration has been largely based on its cooperation with TNC affiliates in the country.<sup>12</sup>

TNCs from developed countries are still the technology leaders in the world's extractive

industries. However, some oil companies from developing countries – such as Petrobras (Brazil) and Petronas (Malaysia) – are now as operationally competitive as their counterparts from developed countries (chapter IV). In addition, there is a view among State-owned oil companies in some developing countries that TNCs from other developing countries may “understand their requirements better” than TNCs from developed countries (Accenture, 2006: 13; *WIR06*).

International service providers – TNCs that specialize in activities related to particular stages of the value chain – have increasingly become important sources of technology and know-how (chapter IV). Their emergence in both the oil and gas industry and the metal mining industry provides new opportunities for the unbundling of the production process. This might make it easier for developing countries to acquire the specific knowledge they need at various stages, particularly expertise in managing long-term, high-risk and capital-intensive projects. However, the effective use of unbundled assets and specialized contractors requires the host country to have a trained and experienced cadre of technical and management personnel with sufficient expertise and practical experience necessary to bring together and coordinate a variety of suppliers of technology, engineering firms and construction companies.

### c. Employment impacts

Extractive industries generally make only a limited contribution to employment at the macro level (table V.1).<sup>13</sup> This applies to both oil and gas and metal mining, and especially to projects involving TNCs, as they tend to use more capital-intensive technologies than domestic companies in developing countries.<sup>14</sup> Advances in technology brought into a host country by TNCs may reduce labour intensity in exploration and production activities as the new machinery and processes increase labour productivity.<sup>15</sup> In addition, large numbers of expatriates are sometimes involved. Nevertheless, while the overall impact on host-country employment tends to be small, large-scale extractive projects can have significant employment effects at the local level. Moreover, TNCs' contributions in terms of training and skills upgrading may be important for developing countries.

The small direct contribution to employment creation by the mining industry is in sharp contrast to its often significant contributions to revenue and income (section B.1.e).<sup>16</sup> For example, in Botswana, where the mining industry accounts for 40% of GDP, 90% of exports and 50% of government

**Table V.1. Total employment and employment in extractive industries, selected developing countries, latest year**

Item	Indonesia <sup>a</sup>	Malaysia <sup>b</sup>	United Rep. of Tanzania <sup>c</sup>	Viet Nam <sup>a</sup>
Total employment (thousand)	85 702	6 391	16 915	35 386
Total employment in extractive industries (thousand)	774	33	29	110
Employment in extractive industries as % of the total employment	0.9	0.5	0.2	0.3
Employment by foreign affiliates in extractive industries (thousand)	66	6	1	8

Source: ILO and UNCTAD.

<sup>a</sup> Data for 1996.

<sup>b</sup> Data for 1989.

<sup>c</sup> Total data for 2001; foreign-affiliate data for 2000.

revenues, it employed only 9,200 people, or around 3% of the total labour force (UNCTAD, 2007i).<sup>17</sup> In Chile, the contribution of mining to national employment fell from 2% to 0.84% between 1986 and 2005, with employment in copper production declining from 1.03% to 0.76% (UNCTAD, 2007j). In contrast, the contribution of mining to GDP rose from about 8% in the 1980s to 16% in 2005. In Peru, the mining industry employed 101,200 people in 2006, accounting for only 0.7% of the working population of the country. Of these, 35,870 were employed by foreign affiliates: 14,430 directly and 21,440 indirectly.<sup>18</sup> Yet the share of the mining industry in the country's GDP has been about 7% in recent years.

The use of advanced technologies and modern exploration and production techniques by TNCs may sometimes reduce overall employment in the extractive industries as a result of productivity improvements. The employment of semi-skilled local people in particular may be jeopardized further as the industry moves towards ever higher levels of automation, and smaller and more specialized labour (MMSD, 2002). In Ghana, for example, there was a gradual reduction in the levels of local employment in the country's mining industry during the period 1995-2005, when foreign companies' share of mining production increased rapidly, leading to a net loss of more than 7,000 jobs (table V.2). One reason was technical, as all post-reform mining projects have been capital-intensive surface operations, where more sophisticated techniques have enhanced labour productivity. Another reason was that former

State-owned mines had to be restructured (MMSD, 2002).

The contribution of the oil and gas industry to total national employment is also generally small, with or without TNC involvement. Many OPEC countries rely on oil for the bulk of their income and exports, but the direct employment generated by the industry is limited. In Saudi Arabia, for example, less than 1.5% of the working population is employed in this industry (Accenture, 2006), yet it accounts for 45% of GDP, 90% of exports and 75% of government revenues. A similar situation exists in oil-rich countries where TNCs play an important role in oil and gas production. In Equatorial Guinea, for example, where foreign companies account for more than 92% of oil production (figure IV.5), the number of people directly employed in the oil and gas industry has been estimated at less than 10,000 (or about 4% of the working population), and these are mainly expatriate workers (Frynas, 2004), while it accounts for 86% of the country's GDP.

In low-income countries, especially in Africa, the proportion of expatriate workers involved in extractive industries can be very high. In the United Republic of Tanzania, much of the labour recruitment by TNCs takes place in the commercial capital, Dar es Salaam, or in countries with a long tradition of skilled labour in mining such as Australia, Canada, Ghana, Namibia and South Africa (Mwalyosi, 2004). Local managers and professionals may be particularly difficult to recruit locally, as in Ghana where expatriates are mainly at the senior level.

**Table V.2. Employment in Ghana's mining industry, 1995-2005**

Item	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total employment in the mining industry	22 519	21 030	20 343	21 261	17 858	16 537	16 340	14 311	16 056	15 525	15 396
Expatriate staff (A)	234	229	221	261	242	233	205	242	188	166	181
Ghanaian senior staff (B)	2 511	3 143	2 862	2 804	2 442	1 697	1 807	1 813	1 901	1 736	1 905
Ghanaian junior staff	19 774	17 658	17 260	18 196	15 174	14 607	14 328	12 257	13 968	13 622	13 310
Ratio of A to B (%)	9.3	7.3	7.7	9.3	9.9	13.7	11.3	13.3	9.9	9.6	9.5

Source: Minerals Commission of Ghana.



As noted, despite their low labour intensity, large-scale extractive projects can have a significant employment effect at the local level (especially if there are few other employment opportunities). For example, in metal mining, the Obuasi mine (Ghana), owned by AngloGold Ashanti, employs about 6,700 local staff (ICMM/World Bank/UNCTAD, 2006), and in oil and gas, the Sakhalin-2 project employs nearly 17,000 people, over two thirds of them Russians. In its next operational phase, the Sakhalin-2 consortium will create 2,400 permanent jobs, of which a similar share is likely to be taken by Russians. Foreign investments in oil and gas extraction in the region have contributed to reducing unemployment in Sakhalin to the lowest rate (0.2%) among the different regions of the Russian Federation.<sup>19</sup>

The overall impact of TNC activities in extractive industries on local employment can be significantly enhanced by multiplier effects, as indirect employment may occur at different stages of the value chain. According to some estimates, the Obuasi mine has created some 30,000 indirect jobs (ICMM/World Bank/UNCTAD, 2006). In Mali, three gold mines (Morila, Sadiola and Yatéla) employed some 1,000 workers each, with a multiplier effect of six to eight (Cole-Baker, 2007). While the direct employment created by Minera Escondida in Chile was about 2,800 people in 2004, the total employment, including contractors and other induced employment may have been as much as 15,000 people (Dietsche et al., 2007a: 40–41).

The net impact on the local employment depends partly on how large-scale extraction activities affect employment in pre-existing activities in mining areas (e.g. artisanal and small-scale mining or agriculture). In the metal mining industry, the entry of TNCs may displace or diminish such activities, with adverse effects on employment in artisanal and small-scale mining. For example, the rapid rise in exploration and excavation activities by TNCs in Ghana since the implementation of

the structural adjustment programme has displaced thousands of artisanal gold miners (Hilson and Potter, 2005).<sup>20</sup> Finding a solution to the potential conflict between small-scale mining, which is more labour-intensive, and industrial mining, which is safer and more efficient but less labour-intensive, is an important issue in many developing countries (chapters III and VI).

A number of extractive-industry TNCs invest in human resource development by offering training and skills upgrading to their workers (UNCTAD, 2002). In 1999, Minera Escondida in Chile established a specialized training centre that helps develop the occupational skills required in various mining operations (box V.1). In Botswana, Debswana – a joint venture between the Government and De Beers – has established an intensive training and apprenticeship programme. It also offers its employees scholarships for advanced training both within and outside the country (UNCTAD, 2007i). In the oil industry as well, TNC contributions have helped create the general oil and gas workforce as well as skilled engineers (Accenture, 2006). For some developing countries, engineers trained by TNCs in sophisticated technologies are particularly valuable. In China, since the 1980s, international oil companies such as ConocoPhillips, ExxonMobil and Shell have helped produce qualified local engineers for offshore oil exploration.<sup>21</sup> While TNCs themselves benefit from such training, as it eliminates the need to hire more expensive expatriate engineers from their home countries, it can constitute a valuable contribution to human resource development for the industry in the host country.

#### d. Enhancement of exports

Exports are an important means for a country to allocate resources efficiently based on its comparative advantages. They also help generate the foreign exchange required to finance its imports

#### Box V.1. Fostering skills in the mining industry: the case of CEIM in Chile

The Centro de Entrenamiento Industrial y Minero (CEIM), the industrial and mining training centre founded in 1999, belongs to the Escondida Educational Foundation<sup>a</sup> and is a non-profit organization. Its main mission is to foster excellence in the mining industry. The Centre has developed several programmes to improve employment opportunities for local workers within a particular region (Region II) in Chile. It has an alliance with the British Columbia Technological Institute of Vancouver, Canada, which allows the Centre to manage, develop and certify its skills training programmes under an international certification scheme (CEIM-BCTI). Another alliance with Minera Escondida and 20 other companies has further strengthened the Centre. It is expected to train 350 technicians in electronics, electrical engineering, heavy machinery and industrial machinery every year, beginning in December 2006.

Source: Dietsche et al., 2007a.

<sup>a</sup> The Minera Escondida Foundation is a non-profit organization created in 1999 to develop projects in support of education, health, youth and indigenous people (see [www.bhpbilliton.com](http://www.bhpbilliton.com)).



of goods and services, including those needed for industrialization, and thereby, to promote economic growth. While most countries' extractive industries are export-oriented, TNCs can help boost mineral exports by facilitating an expansion of production and through their access to global markets.<sup>22</sup> At the same time, the involvement of TNCs in trading, including intra-firm trading activities, has sometimes given rise to concerns about the limited value added to minerals before exporting, and the use of transfer pricing.

For a number of developing countries, revenues from a single mineral account for a large share of their total export earnings (chapter III).<sup>23</sup> In recent years, high mineral prices have reinforced this pattern. In Chile, for example, the share of copper in the total exports of goods rose from an average of 38% in 1991-2003 to 61% in 2006.<sup>24</sup> Evidence from countries in which TNCs dominate mineral production (chapter IV) suggests that their entry has led to significant export growth:

- In Ghana, after the entry of FDI on a large scale, gold exports, mainly by TNCs, rose threefold from 1990 to 2004, increasing their share of the total exports of the country from a quarter to 37% (UNCTAD, 2005b: 48-50).
- In Zambia, the production and exports of copper have grown significantly since the late 1990s. This has been a direct result of FDI that revived the industry (UNCTAD, 2007m). In 2006, exports of copper and cobalt by TNCs were \$3.2 billion, about four fifths of the country's total exports.<sup>25</sup>
- In the United Republic of Tanzania, since gold mining was opened up to FDI in the 1990s and TNCs assumed a dominant role in gold production, it has emerged as an important export-oriented industry (UNCTAD, 2002). From no export earnings prior to 1990, gold exports earned \$640 million by 2005, and TNCs' total mineral exports reached \$693 million in 2005, accounting for 43% of the total exports of the country.<sup>26</sup>
- FDI has played a major role in enhancing Peru's export performance. Between 1990 and 2006, exports of metallic minerals surged from about \$1.5 billion to \$15 billion, with their share in total exports rising from 42% to 62% (UNCTAD, 2007k).

In the oil and gas industry, TNCs have similarly helped countries such as Angola, Argentina, Azerbaijan, Ecuador, Indonesia, Kazakhstan and Peru increase production and exports over the long term. In Ecuador, an oil pipeline constructed by a consortium of TNCs during the period 2001-2003 facilitated increased exports of crude oil by

adding transport capacity for 400,000 barrels per day (ECLAC, 2004: 48). In many other developing countries, such as the oil-producing countries in West Asia, it is the State-owned companies that are controlled and managed without TNC participation that have successfully expanded oil exports.

Compared to exports of manufactured goods, which can help firms from developing countries obtain economies of scale, expand scope of production, and learn from their experience in export markets (*WIR02*), exports of unprocessed minerals yield much fewer potential benefits of these kinds. If countries could add value to the minerals extracted before they are exported, export revenues as well as the potential for learning could increase significantly. However, in many developing countries, most minerals are exported in unprocessed form (section B.2.a).

While TNC participation is likely to boost the export revenues of host countries, their affiliates may also have a higher propensity to import various inputs from foreign suppliers. Foreign affiliates may also repatriate their profits, thereby reducing the positive effects of the increased export revenues their participation may generate. This could also reduce the effects from improvements in the terms-of-trade (as a result of the recent increase in mineral prices) on the national income of a host country (section B.3; UNCTAD, 2005c). Reflecting the complex relationship between trade and investment, a rapid growth of exports is likely to influence the balance of payments, and possibly also the real exchange rate. Such an effect underlines the importance of well-conceived macroeconomic policies for mineral-exporting countries (section B.3, chapter III, chapter VI).

### e. Generation of government revenue

For many mineral-exporting developing countries, the most important direct contribution of mineral extraction is increased income for the host country, much of which takes the form of government revenues. When extraction involves TNC participation, the income accruing to the host country depends both on the amount of the value created, and on how that value is shared between the host-country recipients (i.e. labour, other input providers and the government) and the TNC. Capturing the maximum value created by TNCs is a major concern of host countries with regard to TNC participation (chapter VI). It assumes particular significance in the extractive industries, especially when a sizeable proportion of the value of minerals sold consists of resource rents.<sup>27</sup> Their distribution between the TNC and the host country

is negotiated as part of the terms and conditions for TNC participation. Although salaries and wages paid to local employees and inputs purchased from local suppliers generate incomes to varying degrees in different extractive industries, capturing a significant share of the mineral rents through taxes and other payments to the government is particularly important for host countries.

Increased production and exports due to TNC involvement in extractive industries do not automatically generate large government revenues. The fact that TNCs are involved means, by definition, that a certain proportion of the revenues will go to them rather than to the host economy. However, if the participation of TNCs helps expand the scale of production and, by extension, the overall size of the revenues, then, depending on the terms and conditions governing TNC participation, the amount of the government's revenue may still be greater than if no TNCs had been involved.

Governments raise revenues from extractive industries through direct ownership (wholly State-owned companies or joint ventures), taxes, levies, royalties and/or other payments under various contractual arrangements (including production-sharing agreements). The approach chosen differs between the oil and gas and metal mining industries (chapters IV and VI). Data on the distribution of revenue between host developing countries and TNCs are generally scarce, which complicates international comparisons and assessments. Various studies of fiscal regimes suggest that the government's take in revenues generated from oil and gas activities over the lifetime of a project vary widely (between 25% and 90%);<sup>28</sup> the corresponding range in metal mining is between 25% and 60% (Land, 2007; Otto, Batarseh and Cordes, 2000).

Government revenues collected from projects undertaken by TNCs can be compared to the companies' revenues or profits. In Mali, for example, the total income tax paid by the Sadiola mine was \$20 million during 2000–2003, accounting for 3% of its gross revenue and 10% of its income before tax; and the mines of Morila and Yatéla in the same country did not pay any income taxes during that period because of tax holidays (Cole-Baker, 2007).<sup>29</sup> Such firm-level data on profitability and tax payments are generally hard to obtain.<sup>30</sup> Comparisons are often made instead between a government's revenue and the country's mineral exports.<sup>31</sup> In Chile, the total copper exports of the 10 largest private mining companies (nine of which are foreign-owned) during the period 1991–2003 were estimated at some \$33 billion, while their tax payments were \$2.1 billion (6.5% of their copper export revenues).<sup>32</sup> This share increased

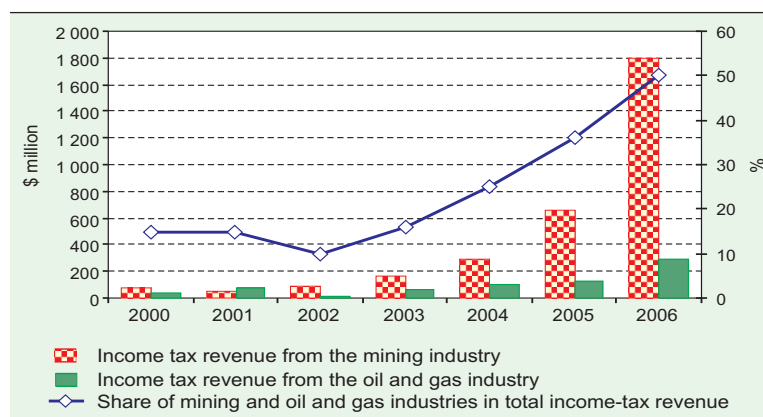
to 16.3% over the next two years.<sup>33</sup> During 2004–2006, foreign mining companies in Peru paid \$3.5 billion in income taxes, equivalent to 14% of their export revenues.<sup>34</sup> In the United Republic of Tanzania, out of earnings of \$2.8 billion from mineral exports during 1999–2005, the Government received some \$252 million (9% of export revenues) in the form of various tax payments and royalties. In 2005, this contribution accounted for 4% of total government revenues.<sup>35</sup> In Zambia, the \$75 million in government revenues from copper mining corresponded to less than 5% of the value of copper and cobalt exports in 2005.<sup>36</sup> In these and other developing countries, various stakeholders have expressed dissatisfaction with the share of revenues remaining in the country, and a number of countries have taken steps to increase the government's take (chapter VI).<sup>37</sup>

Low taxes and royalty payments as a share of export revenues are not the same as low shares in mining profits. The latter are the difference between total revenues and costs and may be low in the early years of mining projects as firms try to recover their fixed costs. It often takes time for an extractive-industry project to generate significant government revenues. This is partly because most countries offer accelerated depreciation and other incentives to investors to allow them to recover, over a period of time, the significant cost outlays involved in such projects so as to reduce risk and encourage investments.<sup>38</sup> Thus tax payments may not become due until several years after a project begins to generate export revenues.

In Peru, for example, income taxes from the mining industry were very small during the entire decade of the 1990s (UNCTAD, 2007k). As late as in 1998–1999, they amounted to well below \$100 million per year, or about 7% of total government revenues. As the benefits to companies from accelerated depreciation gradually declined, and as metal prices increased, the picture changed dramatically. Between 2000 and 2006, the annual income tax revenue from mining companies rose from \$70 million to \$1.8 billion (figure V.2), and from 10% to 43% of total government revenue.<sup>39</sup> During the same period, the annual income tax revenue from the oil and gas industry rose from \$35 million to \$296 million, corresponding to 5%–7% of total government revenue (figure V.2).

The sharing of mineral rents is also influenced by TNCs' accounting practices, financial behaviour and possible transfer-pricing activities. By manipulating transactions that are internal to them, TNCs may, to some extent, choose where to declare profits to minimize their tax burden (*WIR99*). In Chile, it took considerable time before

**Figure V.2. Income tax revenue from mining and oil and gas industries, Peru, 2000-2006**



Source: Superintendencia de Administración Tributaria, Peru.

the affiliates of foreign mining companies started to pay any taxes, with the exception of Minera Escondida. While the accelerated depreciation allowance explained part of this, the tax system was also designed in a way that encouraged companies to finance their investment through intra-company loans, the repayment of which reduced their net revenues for several years (UNRISD, 2005). These factors help explain why in Chile, following the FDI boom in mining, the share of the State-owned company, Codelco, in the country's total copper production fell from 85% in 1980 to around 32% in 2005,<sup>40</sup> while its contribution to the Government was substantially higher than that of the foreign affiliates (figure V.3), and despite this it showed greater profitability. Since 2003, tax revenues from foreign affiliates have started to rise, but they were still below those from Codelco in 2006.

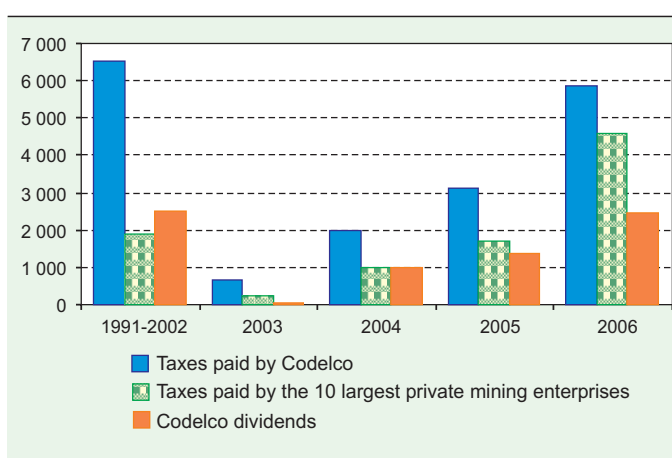
The issue of retained value through tax revenues, long a concern of developing countries that host TNCs in extractive industries, has attracted renewed attention during the recent price boom which has contributed to increased corporate profits and higher tax revenues, as highlighted in the case of Peru (figure V.2). Between 2002 and 2006, the net profits of 40 of the world's largest mining companies<sup>41</sup> rose from \$4 billion to \$67 billion (PricewaterhouseCoopers, 2007b). At the same time, the total income taxes paid by these companies rose from \$2 billion to \$27 billion (Ibid.).<sup>42</sup> However, data on the allocation of the taxes by country are not available. It seems that a significant proportion may have gone to the home countries of the TNCs.<sup>43</sup>

This has prompted criticism that the conditions offered by some developing countries for FDI projects in extractive industries have been overly generous, resulting in a disproportionately low share of government revenues in the total rents.<sup>44</sup> Against the backdrop of high mineral prices, several countries have made changes in their fiscal regimes related to the extractive industries (chapter VI). The recent price boom has also led various stakeholders, such as local communities and workers, to demand a larger share of the revenues from mining. The increasing number of strikes following the price boom shows

that workers are anxious to increase their share of the revenues (PricewaterhouseCoopers, 2006; chapter VI).<sup>45</sup>

As already noted, governments can also secure a share of the resource rent through equity ownership; State ownership or joint ventures with TNCs are commonly used modes, especially in the oil and gas industry (chapters IV and VI). Some examples also exist in metal mining. In Chile, for example, State-owned Codelco has entered into a joint venture with Phelps Dodge Mining Co. (now part of Freeport-McMoRan Copper & Gold).<sup>46</sup> In Botswana, diamonds are mined by Debswana, a 50-50 joint venture between the Government of Botswana and De Beers, through which Botswana

**Figure V.3. Contributions to fiscal revenues by Codelco and the 10 largest private mining enterprises<sup>a</sup> in Chile, total of 1991-2002, 2003-2006 (Millions of dollars)**



Source: The Chilean Copper Commission, Ministry of Finance of Chile and Codelco.

<sup>a</sup> Data on taxes in 2005 and 2006 correspond to all private mining enterprises (including the 10 largest).

receives a large share of the rents. The Government of Botswana also has significant ownership shares in some other mining companies, many of which are listed on the Botswana Stock Exchange (as dual listings given that their primary listings are in London, Toronto or Australia) (table V.3). This gives the Botswana public, particularly institutional investors, an opportunity to take an ownership stake in these mining projects, and, accordingly, a share in the rents.

The sharing of revenue from a particular mining project between a TNC and a host country partly reflects their relative bargaining power (Vernon, 1971; Moran, 1974).<sup>47</sup> Countries that have rich deposits and considerable domestic capabilities to exploit them are in a better position to reap a larger share of the rents through advantageous ownership and tax arrangements. The evolving balance of bargaining power between TNCs and host-country governments may explain the dynamics of rent sharing over time and the changes in tax regimes and ownership arrangements in many developing countries. In Botswana, for example, the Government's shareholding in Debswana was initially 15%, but later increased to 50%. The volatile nature of mineral prices influences the relative bargaining power. In periods of low prices, the profitability of resource extraction projects tends to decline, reducing the bargaining position of a country in its efforts to attract investment, and vice versa.

To conclude, the net flow of revenue and income generated for a host country from TNC operations in the extractive industries depends on how TNC participation affects the overall size of the value created, the nature of the revenue-sharing (or capturing) mechanisms in place, and the extent to which they can be adapted to changing

conditions in the industries and markets. Ultimately, the development implications of the government revenues generated from mineral extraction (with or without TNCs) will be determined by how the funds are managed and used vis-à-vis the country's development objectives and the needs of both current and future generations (chapter III). Governments may need to neutralize the impact of large windfall revenues on greater aggregate demand, inflation and exchange rate appreciation. This requires prudent fiscal management aimed at revenue sterilization for example, by accumulating budget surpluses, paying off debt, and/or channelling revenues into a stabilization fund<sup>48</sup> that could be used to prop up the budget when aggregate demand is insufficient and output and real incomes are falling.<sup>49</sup> Without appropriate policies and institutions in place, there is an increased risk that the government revenues will do little to promote sustainable development (chapter VI).

## 2. Indirect economic effects

In addition to their direct effects on the host economy through the various channels discussed above, TNC activities in extractive industries can indirectly affect host countries, for instance through their impact on business linkages and infrastructure development. In addition, by participating in extractive industries in host countries, TNCs can inject competition into these industries, and in so doing help boost economic efficiency through reduced production costs, innovation and technological change.<sup>50</sup> However, in countries with weaker domestic capabilities, the participation of TNCs may drive existing domestic enterprises, and particularly artisanal and small-scale mining firms, out of business. Such crowding out could

**Table V.3. Ownership structure of major mining companies in Botswana, 2005**

Company	Mineral	Main mines	Ownership	Listings
BCL	Nickel, copper, cobalt	Selebi-Phikwe	Public & misc. 38%; LionOre (Canada) 29%; Government of Botswana (GoB) 33%	Toronto Stock Exchange (TSE) Botswana Stock Exchange (BSE)
Botswana Ash	Soda ash & salt	Sua Pan	Anglo American (21%); De Beers (21%); GoB (50%); banks (8%)	
Debswana	Diamonds and coal	Orapa, Jwaneng, Letlhakane, Dantshaa, Morupule	De Beers (private) <sup>a</sup> 50%; GoB 50%	
Diamonex	Diamonds	Lerala	Diamonex (Australia) 100%	Australian Stock Exchange BSE
Mupane Gold	Gold	Mupane	Iamgold (Canada) 100%	TSE BSE
Tati Nickel	Nickel, copper, cobalt	Phoenix	LionOre (Canada) 85%; GoB 15%	TSE BSE

Source: UNCTAD.

<sup>a</sup> Owned by Anglo American (United Kingdom) (45%), Central Holdings (South Africa) (40%) and Government of Botswana (15%).



affect host-country enterprise development in extractive industries; it may also have adverse impacts on employment (section B.1.c) and trigger conflicts between foreign companies and domestic stakeholders (section D.2).

### a. Linkages

Through linkages between foreign affiliates and domestic enterprises, TNC participation may play a catalytic role in the development of related industries (*WIR01*) and, under certain conditions, of an extractive industry cluster. Linkages can take place along and beyond the extractive-industry value chain. Backward linkages occur when foreign affiliates acquire inputs (goods or services) from local suppliers, and forward linkages occur when foreign affiliates sell outputs (minerals) to domestic buyers. Linkages can be developed with domestic firms or with other foreign affiliates in the host country. Linkages with the latter may generate a lower degree of local value added than those with the former, but they can nevertheless be important especially in countries where domestic capabilities are at a nascent stage.

However, a common feature of the extractive industries, especially when TNCs are involved, is the relatively limited incidence of linkages with domestic suppliers, particularly as compared with manufacturing and services sectors (chapter III). In Africa, where the extractive industries still account for the largest proportion of FDI (chapter IV), “the tendency of FDI to reinforce enclave-type development appears to be a real danger, with external integration privileged over the internal integration of the local economy” (UNCTAD, 2005b: 35). Similar concerns exist in Latin America. According to one study, “extractive activity carried out by TNCs [...] mainly uses imported inputs [...], with the result that it is poorly integrated into local productive structures (except in the case of natural gas), and gives rise to very few productive linkages” (ECLAC, 2004: 48).

While a booming *metal mining industry* can help promote supplier-buyer relationships in various related services, manufacturing and other activities that produce inputs for exploration, most equipment used by exploration projects tends to be imported (Otto et al., 2006). In Chile, for example, backward linkages of the copper mining industry with domestic manufacturing have generally been weak: most of the machinery, trucks and sophisticated inputs are imported (UNCTAD, 2007j). Although supplies of services such as construction, transportation, catering and cleaning are more likely to be sourced locally, linkages

with domestic providers of knowledge-intensive and high value-added services are often weak. The experience of low-income developing countries in building up their domestic capabilities in these areas has generally been disappointing. In most of them, international suppliers meet the growing demand for such services, sometimes through locally established affiliates. In Ghana, for example, 60 mining support service companies, mostly foreign-owned, had been established by 1998, providing various services (including geological, engineering and drilling) to the foreign-invested mines. Services such as haulage and construction were dominated by local firms (Aryee, 2001).

Forward linkages in metal mining can involve the development of processing and various manufacturing activities. TNC participation can help provide inputs that encourage the emergence of refining, smelting or manufacturing activities, and contribute to the creation of industrial clusters (Ramos, 1998). Foreign investment in gold mining, for example, has fostered the development of a jewellery manufacturing industry in Indonesia (Leyland, 2005). In many other mineral-rich developing countries, however, little processing and manufacturing have emerged. Small, low-income developing economies typically do not have the capacity to enter into the smelting and refining stages of the value chain, which are capital-intensive and tend to have larger economies of scale (Mintek, 2007). Although some developing countries succeeded in establishing capacities for smelting or other types of processing of metallic minerals decades ago (Radetzki, 1993), divergent views between TNCs and host-country governments about the location of such activities are likely to persist.

In *the oil and gas industry*, oilfield services now account for the bulk of the total cost of oil production (chapter IV).<sup>51</sup> The size of the oilfield services market in Africa alone has been estimated at about \$30 billion per year (UNCTAD, 2006d), the bulk of which is served by large services TNCs (table IV.9). The value of the oilfield services market in Nigeria, for example, was about \$8-10 billion (Kupolokun, 2004), yet only one tenth of these services were contracted to local companies. This suggests a high potential for enhancing the participation of local contractors in the supply chain (UNCTAD, 2006d). Moreover, the share of local content in the country is very low in comparison with some other oil-producing developing countries such as Brazil and Malaysia (table V.4). In developing and transition economies with stronger domestic capabilities, there is greater scope for backward linkages. The Sakhalin-2 project in the Russian Federation has awarded \$8.3 billion worth



**Table V.4. Local content in supplies to upstream oil and gas activities, and GDP, selected oil-producing countries, various years**

Item	Brazil	Indonesia	Malaysia	Mexico	Nigeria
Local content in supplies to upstream oil and gas activities (%), 2000	70	25	70	Largely local	5
GDP (\$ million), 2005	799 413	281 276	130 770	768 437	113 461
GDP per capita (\$), 2005	4 289	1 263	5 159	7 180	863

Source: UNCTAD and Heum et al., 2003: 21.

of contracts to Russian companies (UNCTAD, 2007). The proportion of contracts awarded to Russian firms, above 50% in 2006, is expected to grow further during the operational phase (Ibid.). Indonesia has managed to achieve 25% local content, while other developing countries such as Brazil, Malaysia and Mexico have performed much better (table V.4).

Crude output in the oil and gas industry can feed into the rest of the economy as intermediate inputs: crude oil for the petroleum refining industry and gas and its liquid feedstocks for the petrochemical industry. Such forward linkages have helped the development of the manufacturing sector not only in some developed countries but also in a number of developing and transition economies. Although domestic efforts are crucial in this process, TNC presence may also play a role. Newcomer TNCs in the global oil and gas industry seem to be more willing to invest in downstream activities. For example, CNPC (China) built the Khartoum Refinery in Sudan, with an annual oil refining capacity of 2.5 million tons in 2003. In Nigeria, the development of downstream capacities was a key criterion in the recent bidding rounds for licences, and Chinese oil companies were willing to invest in downstream activities (Accenture, 2006; Mitchell and Lahn, 2007). In oil-producing countries in West Asia, domestic State-owned oil companies have successfully expanded from upstream exploration and production to downstream manufacturing activities, particularly petrochemicals, often through alliances with TNCs with a global marketing presence (Al-Moneef, 2006).

There are several reasons for the frequently low incidence of linkages between foreign affiliates and local firms in extractive industries. Some are related to constraints regarding the availability, quality and cost of local inputs, economies of scale that inhibit processing activities, and the lack of efficiency and competitiveness of domestic firms. In addition, foreign affiliates may prefer to source inputs from non-resident suppliers with whom they have long-established relationships. In low-income countries, a lack of suppliers with the required capabilities and a shortage of appropriate

skills in the local work force can make it difficult to source locally or expand activities downstream. For example, in Mongolia significant organizational development and capacity-building of local firms is needed in order for them to meet new demand by the emerging mining industries and for those industries to create significant multiplier effects (Slowey and Lewis, 2004). Limited linkages also exist in the oil and gas industry in developing countries, particularly in LDCs (Nordås, Vatne and Heum, 2003).

While data limitation makes it difficult to directly compare TNCs and domestic companies, the available evidence suggests that domestically owned mining or oil companies tend to have stronger local linkages. In Chile, for example, a relatively high level of local refining activities were recorded when the State-owned enterprises dominated the value chain of copper production. In the 1980s, when Codelco was the principal producer of copper, the share of refined output in the country's total copper exports was nearly 70%. Since 1989, that percentage has been declining, to 58% in 1995 and 53% in 2005, largely due to the impact of foreign investment, mainly in Minera Escondida.<sup>52</sup> In the oil and gas industry as well, the links and stimulating effects of extractive industries on the domestic economy seem to be stronger in countries where State-owned oil companies dominate oil and gas production (table V.4). In oil-producing countries in West Asia, for instance, the inputs of goods and services provided to the oil and gas industry by local sources rose significantly after nationalization of that industry (Al-Moneef, 2006). It was also after nationalization that oil and gas production led to the development of refining and petrochemical industries in those countries.

To accelerate development and improve the long-term welfare of a country and its people, its non-renewable natural resource wealth needs to be transformed into a broader industrial base. TNCs can be a driving force behind the emergence of independent domestic suppliers and industrial clusters only if host countries are able to develop their domestic capabilities. Proactive policies and supporting institutions can play an important role in this respect (chapter VI).

### **b. Infrastructure development**

TNC activities in extractive industries are often associated with the development of public utilities including electricity and water supply in a region, and of transportation infrastructure like roads, railways and ports. Such facilities are often necessary for the extraction, transport and export of some minerals.<sup>53</sup>

There are many such examples. For the operations of Minera Escondida in Chile considerable investments for the supply of power and water were required, as well as an extensive road development programme (Dietsche et al., 2007a). The privatization of Zambia Consolidated Copper Mines Limited (ZCCM) in the late 1990s was followed by significant investments by TNCs in Zambia's infrastructure and urban development.<sup>54</sup> In the United Republic of Tanzania, there have been steady infrastructural developments in the Mwanza region as a result of the development of the Lake Victoria Goldfields over the past decade. The improved roads, airport facilities, hotels and ancillary services have contributed to an increase in tourism in the northern part of the country.<sup>55</sup> Large foreign-invested oil and gas projects may also lead to the development of local infrastructure. For example, the Sakhalin-1 and Sakhalin-2 projects in the Russian Federation required the improvement of roads, bridges, airport and seaport facilities, railways, public medical facilities, waste management, telecommunications and other forms of infrastructure. The Sakhalin-2 project alone involves a \$390-million infrastructure upgrade programme.<sup>56</sup>

Such investments can be important for low-income countries, particularly LDCs, where the lack of infrastructure is a major obstacle to economic and social development. TNCs may play an important role in this respect, but their contributions to infrastructure can also be controversial. The extent to which new infrastructure brings broader benefits to a host economy depends, among other things, on the specificity of the assets and infrastructure developed and the project's location. Specialized transportation infrastructure, such as pipelines for long-distance oil and gas transportation and helicopter services for transporting gold and diamonds, may be confined to the extractive projects with few benefits for the country. By contrast, the building of roads, railways and harbours for transporting copper or iron ore can benefit the economy as a whole. The scope for broader benefits also depends on the location of a project. If a mine is located in a remote area, as in the cases of Minera Escondida and the Sakhalin projects, benefits to surrounding areas may be marginal.<sup>57</sup> Conversely, if

the mineral extraction takes place in more populated areas, new infrastructure may benefit more people. Finally, benefits may be linked to the life cycle of a project, as the infrastructure created to support the project may not be maintained once it closes.

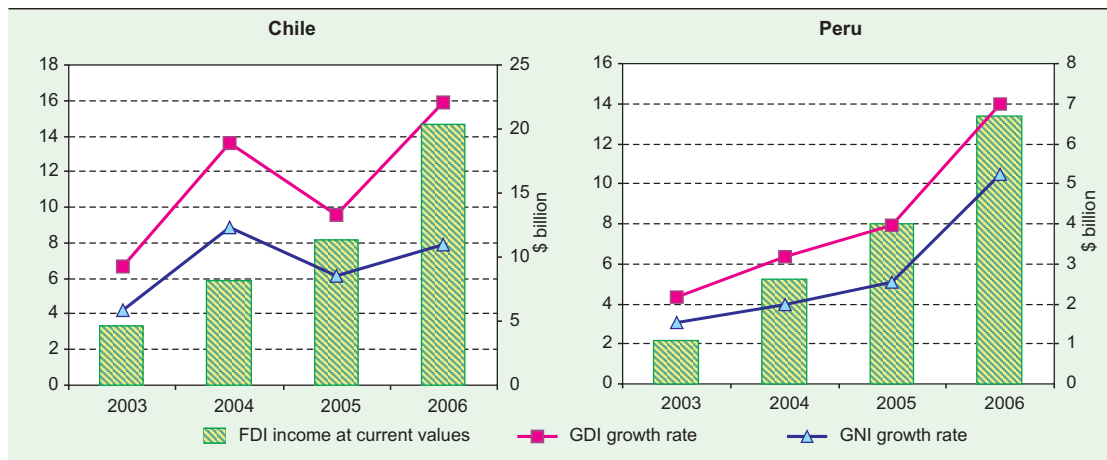
### **3. Overall impact: implications for macroeconomic performance**

What are the implications of the direct and indirect effects of TNC activities in extractive industries for the overall economic performance of a host developing country? The TNC participation may significantly influence the economic performance of host countries at the macro level, in terms of macroeconomic stability, economic growth and income distribution. Much of the impact relates to the development of the extractive activities in general (chapter III), but TNCs can play a specific role.

In terms of macroeconomic stability, arguably the most important effects from TNC activities in extractive industries arise from their influence on the balance of payments of a host country, with potential implications for inflation and the real exchange rate (chapter III). On the one hand, both capital inflows in the investment phase and export revenues in the operation phase can have a positive impact on a country's balance of payments. In Botswana, for example, mineral exports by TNCs have enabled the country to run current account surpluses and to accumulate substantial foreign exchange reserves, which have helped it earn the highest credit rating in Africa.<sup>58</sup> On the other hand, during the construction of a large mining project, imports of equipment and services may have the opposite effects, as will the subsequent repatriation of profits. In Chile, for example, the recent commodity price boom has led not only to a surge in the share of FDI financed through reinvested earnings but also to an increase in the repatriation of profits by foreign affiliates (chapter II). Between 2003 and 2006, the latter grew from \$2 billion to \$13 billion.<sup>59</sup>

In terms of economic growth performance, TNC involvement in extractive industries generates income in the forms of wages and other payments for host-country inputs and, most importantly, government revenues (section B.1.e). The latter may help developing countries overcome initial constraints on their economic growth, such as low levels of saving and investment, and provide financial resources for investment in infrastructure and human capital. Provided the revenues are appropriately used, this can give a "big push" to the growth of a host economy.<sup>60</sup> At the same time, resource extraction may also have a negative effect

Figure V.4. Growth rates of GDI and GNI, and FDI income, Chile and Peru, 2003-2006



Source: UNCTAD.

on industrialization and long-term economic growth by strengthening various distorting effects.<sup>61</sup> The manner and extent of revenue sharing between TNCs and the host country significantly influence the extent to which extractive industries contribute to economic growth. Also, high FDI income may reduce the positive impacts of any terms of trade improvements on national income. This has been apparent in Chile and Peru in recent years, as highlighted by the gap between the growth rates of gross domestic income (GDI) and gross national income (GNI) (figure V.4).<sup>62</sup> Furthermore, foreign companies may have a greater propensity to use foreign suppliers of various inputs, thereby limiting TNCs' indirect contributions to domestic value creation through local procurement and other linkages to domestic enterprises (section B.2.a).

Positive contributions to the economic growth of TNC-led extractive industries have been observed in some low-income countries. In Ghana, for example, the share of mining in GDP rose from 1.5% in the mid-1980 to 5.7% in the second half of the 1990s, despite generally low gold prices during that period. GDP per capita, after declining in 1980–1989 by 0.6% annually, started growing again, reaching an average growth rate of 1.9% in 1990–2004, and accelerating to 3% in 2003–2004 (UNCTAD, 2005d: 329). Botswana's abundance of diamonds, exploited jointly with TNCs, has contributed to the country's strong economic growth (box V.2). These and other successful examples notwithstanding, it has been argued that resource-rich economies have tended to grow less rapidly than resource-poor economies (box III.2), though the specific role of TNCs, if any, in this context has not been much studied. However, it is a fact that the growth performance of a number of host countries in which TNCs play a significant role in extractive

industries has generally been poor, as highlighted in the case of Nigeria (box V.3).

In addition, even if TNC participation in extractive industries contributes to economic growth in the host country as a whole, the benefits may not be well distributed and the well-being of most of the citizens may not improve. For example, in Equatorial Guinea, where TNCs dominate oil production (chapter IV), the rapid growth of GDP since the early 1990s has not been accompanied by an improvement in the economic and social welfare of the majority of the people. Although GDP per capita reached \$4,100 in 2004, the country ranks 120 in the Human Development Index: 57% of its people have no sustainable access to potable water, the majority of the people live on less than a dollar a day, and the average life expectancy is 43 years (UNDP, 2006a). This situation is attributed to a lack of transparency and accountability in the management and deployment of the country's mineral wealth (World Bank, 2002).

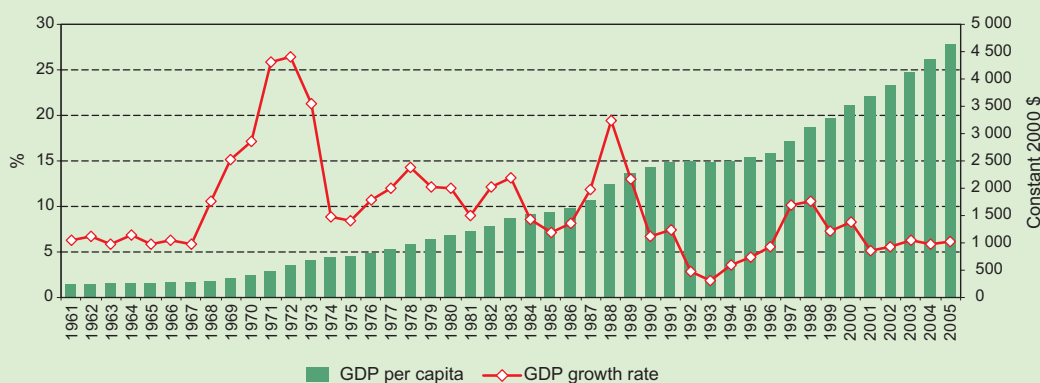
Similar problems prevail in several other host developing countries, especially in Africa. Indeed, the way government revenues are managed and used significantly influences the distribution of income. While resource revenues can be used to improve the welfare of the host-country population and for long-term economic growth, under certain circumstances they may be appropriated by small groups, and consumed rather than invested. If this occurs, capital accumulation and productivity growth, which are crucial for economic development, cannot be realized, and the country (or at least the majority of its population) may end up worse off.

To sum up, the extent to which TNC participation promotes the overall economic performance of a host country depends on many factors, including the scale of TNCs' value-

### Box V.2. TNC activities in extractive industries and host-country economic development: the experience of Botswana

Over the 30-year period from 1970 to 2000, Botswana was the fastest-growing economy in the world (box figure V.2.1) and the structure of its economy was transformed. At the time of the country's independence in 1966, agriculture accounted for 40% of GDP, while mining was virtually non-existent; by 2006 agriculture accounted for 2% of GDP and mining for 40%. As a result of mineral-led economic growth, the country has progressed from being one of the poorest countries in the world to becoming an upper-middle-income developing country, and it is the only country ever to have graduated from LDC status.<sup>a</sup>

Box figure V.2.1. GDP growth and GDP per capita, Botswana, 1961-2005



Source: UNCTAD.

The impact of TNCs on Botswana's economy has been integrally linked with that of the mining industry as a whole, as almost all the mining companies are either wholly owned by TNCs or are operated as joint ventures with the Government. Over the period 1975-2006, the industry directly contributed to 46% of total GDP growth, with a particularly strong impact in the early part of the period (box table V.2.1).

Diamonds accounted for about four fifths of Botswana's total exports during the period 2001-2005,<sup>b</sup> which made the country the world's largest producer and exporter of diamonds in value terms. Through its joint venture with De Beers, the main TNC involved in its diamond mining, Botswana has exploited its key natural resource and gained a significant share of the profits.<sup>c</sup> A combination of mineral wealth and foreign investment has yielded considerable development benefits for Botswana, in terms of rapid growth, rising living standards and extensive investment in social and economic infrastructure, along with healthy fiscal and balance-of-payments positions.

The contributions of TNCs to Botswana's economic development have taken place in the context of an open and transparent mineral licensing and taxation regime, and a competent institutional structure. Foreign investment in mining has been encouraged. Leveraging its strong bargaining position, the Government has negotiated favourable rent-sharing arrangements with TNCs.<sup>d</sup> Although the Government has an ownership stake of 15%-50% in major mining projects, it has not assumed a direct operational role in the mining ventures.

Source: UNCTAD.

<sup>a</sup> Income per capita has risen from \$76 at independence in 1966 to \$5,500 in 2005/06.

<sup>b</sup> Other important mineral exports include copper and nickel. Their share in Botswana's total exports during 2001-2005 was 8%.

<sup>c</sup> De Beers' origins lie in the South African diamond industry. Over time, the company dominated the global diamond industry worldwide. At its peak, De Beers was responsible for marketing more than two thirds of global rough diamond production, and exerted significant control over pricing.

<sup>d</sup> In the mid-1970s, the Government used the opportunity provided by De Beers' applications for further mining licences to reopen negotiations on the terms of the agreement between them. It was criticized for driving too hard a bargain, which it was claimed would discourage further FDI (Hartland-Thunberg, 1978). However, despite the less favourable agreement, De Beers expanded its operation in Botswana. In the mid-1980s, Botswana gained a 5% stake in De Beers, which gave the Government indirect ownership of the TNC. More recently, the Government has again negotiated with De Beers. In return for renewing its licences, the Government has secured commitments from the company to undertake downstream activities in Botswana.

Box table V.2.1. Contribution of mining and other industries to GDP growth in Botswana, 1975-2006 (Per cent)

Period	1975-1985	1986-1995	1996-2006	1975-2006
Mining	73.6	20.4	49.0	45.6
Other industries	26.4	79.6	51.0	54.4

Source: Central Statistical Office of Botswana.



### Box V.3. TNC activities in extractive industries and economic development in Nigeria

Nigeria started oil production in 1958. In spite of having been a significant oil producer for decades, the country has not been able to transform its oil resources into economic growth. Its growth performance has been slower than that of most other oil-producing countries, and many other sub-Saharan African countries (Heum et al., 2003).

Nigeria's oil extraction and production has long involved the participation of Shell.<sup>a</sup> The TNC began operating in Nigeria's oil industry well before that country's independence, and is still the leading oil-producing company in the country.<sup>b</sup> Indeed its operations have contributed significantly to increasing Nigeria's exports – total oil revenues were roughly \$350 billion during the period 1965-2000 (Sala-i-Martin and Subramanian, 2003). Historical data on government revenues from Shell's operations in Nigeria are not available; in 2005 and 2006, they amounted to \$4.3 billion and \$3.5 billion, respectively, in the form of taxes and royalties.<sup>c</sup>

GDP growth in Nigeria has been lower than that of its non-oil-producing neighbouring countries, and more than half of Nigerians still live below the poverty line. The country's poor economic performance can be explained largely by its inability to develop its human resources and build a broader industrial base (Heum et al., 2003). The share of manufacturing in GDP had remained at a very low level during the period 1960-2000, and the industrial base continues to remain extremely narrow and heavily dependent on oil. The windfall revenues from oil have had only a minor impact on non-oil value creation and private consumption (Bevan, Collier and Gunning, 1999). Moreover, the inequitable allocation of revenues from oil and gas continues to adversely affect development (UNDP, 2006b). Indeed, despite its oil wealth, Nigeria ranks 159 among 177 countries in the Human Development Index (UNDP, 2006a).

*Source:* UNCTAD.

<sup>a</sup> In 1937, the company was granted an oil exploration licence covering the entire country.

<sup>b</sup> Shell Petroleum Development Company of Nigeria Limited (SPDC) is a joint venture operated by Shell which accounts for more than 40% of Nigeria's total oil production. The joint venture is owned by Nigerian National Petroleum Corporation (55%), Shell (30%), TotalFinaElf (10%) and Agip (5%).

<sup>c</sup> The Shell Sustainability Reports 2005 and 2006 ([www.shell.com/nigeria](http://www.shell.com/nigeria)).

creation activities in the host country, the sharing of revenues between TNCs and the host country, and the capabilities of domestic enterprises and institutions. Whether inputs are sourced locally or imported from abroad will also influence the degree of TNC contribution to local value creation. Most importantly, appropriate institutions and policies can help eliminate or mitigate various distorting effects and leverage TNC participation in extractive industries for economic development. In particular, how government revenues are managed and used considerably influences the final impact. This in turn depends, among other things, on the overall institutional and policy environment of the host economy (chapter VI)

## C. Environmental impact

Extractive activities, regardless of who performs them, incur environmental costs. Metal mining has been identified as a highly polluting industry, and oil and gas extraction is also associated with a variety of environmental risks (chapter III). Given that certain negative environmental consequences are unavoidable, the question is to what extent TNC participation contributes to reducing or accentuating them. Clearly, when TNCs are the only firms capable of undertaking extraction activities owing to the lack of domestic firms with

the appropriate capabilities and resources, they will be responsible for any environmental degradation.<sup>63</sup> On the other hand, some TNCs may use more advanced and environmentally friendly production technologies and techniques than their domestic counterparts and may also employ and diffuse higher standards of environmental management.

The environmental impacts of extraction projects are influenced by the type of minerals extracted, the technology used, the scale of the extraction activities and the location of the projects, all of which are partly determined by the strategies and activities of TNCs. The larger a mine or an oil field, the greater is its potential environmental impact on the surrounding area and even beyond. The environmental impacts also depend on the geological structures and the techniques of extraction.<sup>64</sup> Furthermore, risks increase when mining is undertaken in the proximity of other economic activities, such as agriculture and fishing, and especially if there is a risk of water contamination. Many mineral deposits are found in environmentally protected areas (usually protected forests), which serve to regulate water flows, prevent floods, control soil erosion, prevent intrusion of sea water, maintain soil fertility and help protect the surrounding ecosystem. If badly managed, the extraction of such deposits can therefore have disastrous environmental impacts. Government



policies and environmental regulations in the host country – including their effective implementation and enforcement – as well as pressures from various stakeholders, such as shareholders, lenders, NGOs and local communities, can influence the environmental practices of TNCs.

In the metal mining industry, fears of adverse environmental consequences often trigger opposition to foreign-invested mining projects, particularly by environmentalists and local communities, who are among the first to be affected. This has been the case, for example, in Ecuador and Peru (ECLAC, 2004: 49).<sup>65</sup> However, in some instances, the pressure to achieve high economic growth rates, create employment and attract FDI has tempted developing countries to accept foreign-invested mining projects that are particularly environmentally risky. In Indonesia, for example, the Government

under the New Order regime (1966–1998) legally allowed foreign investment in mining in protected areas, which prompted criticism from various stakeholders, including indigenous peoples and NGOs, both within and outside the country (Erman and Aminullah, 2007).<sup>66</sup> Environmental problems resulting from the dumping of tailings into the sea and rivers by Newmont Mining (United States) in North Sulawesi and Freeport-McMoRan (United States) in Papua badly damaged the image of TNCs in extractive industries in Indonesia (Ibid.). The environmental impacts of mining by TNCs in some sub-Saharan African countries have been mixed (box V.4; Extractive Industries Review Secretariat, 2003).

Once the minerals have been extracted, the mine and its surrounding environment should be restored to its previous state.<sup>67</sup> Traditionally, however, it has been common to abandon a mine

#### Box V.4. Environmental impacts of FDI in the metal mining industry in selected African countries

In mineral-rich sub-Saharan African countries such as Ghana, the United Republic of Tanzania and Zambia, the environmental impact of TNC activities in the metal mining industry has been mixed. Whereas significant negative consequences in terms of deforestation and air and water pollution have been observed, TNCs have also introduced more environment-friendly technologies and higher standards of environmental protection compared to those of the local artisanal miners.

*Ghana.* Mineral extraction and processing are estimated to account for some 10% of Ghana's industrial pollution (Boocock, 2002). Exploration and mining in forest reserves is a major environmental issue in the country. Foreign-invested mines have contributed to air and water pollution, and have been rated poorly in an official assessment of their environmental practices.<sup>a</sup> However, the evidence also shows that improved environmental performance in mining is directly linked to the introduction of new technologies through FDI. For example, emissions of sulphur dioxide and arsenic at the Obuasi mine used to be 1,000 times higher than internationally accepted standards (Aubynn, 1997), but they have been largely reduced with the introduction by TNCs of a new technology for gold extraction. The TNCs were motivated more by conditions attached to loans than by domestic legislation (Warhurst, 1998). Although large-scale mining has also contributed to water pollution, the major problem in gold mining is caused by the use of mercury by artisanal miners (Boocock, 2002).

*United Republic of Tanzania.* Gold mining activities of TNCs have led to various environmental problems in the country (Kulindwa et al., 2003; George, 2003). Dust pollution in the area around the Geita Gold Mine has contaminated drinking water sources of nearby villages. As a result, the mining firm has had to supply tap water to the local community (George, 2003). TNCs have introduced an environment-friendly technology for gold mining, but at the same time, the large scale of their operations has resulted in significant land clearance and considerable deforestation. For example, the Geita Gold Mine has acquired 110 square kilometres in the Geita Forest Reserve, of which a significant proportion has been cleared (Ibid.).

*Zambia.* Air and water pollution from copper mining has caused major environmental problems in Zambia (Boocock, 2002). Kabwe, a mining town, is known as one of the world's most polluted places from decades of copper mining.<sup>b</sup> During the privatization of ZCCM in the late 1990s, foreign investors were exempted from the environmental liabilities of the past activities of that company, and compliance with environmental regulations was deferred (Ibid.). After the privatization, the new technologies used by TNCs had positive environmental impacts by reducing sulphur dioxide emissions and the concentration of metals in waste dumps. However, other TNCs continue to cause environmental damage. For example, Chimani, a mine opened by Chinese investors in 2005, had been emitting air pollution beyond the statutory limits, affecting hundreds of residents of nearby townships before the Government shut it down in May 2007.<sup>c</sup>

Source: UNCTAD.

<sup>a</sup> The Ghana Environmental Protection Agency publishes an annual rating of mining companies based on their environmental performance. The rating consists of five categories, from A to E (best to worst). In 2000, only one company received a B rating while others rated from C to E (Boocock, 2002).

<sup>b</sup> See [www.blacksmithinstitute.org/site10d.php](http://www.blacksmithinstitute.org/site10d.php).

<sup>c</sup> "Zambia closes Chinese mine over air pollution: lack of pollution controls threatens health of area residents", *Agence France Presse*, 15 May 2007 ([www.industry.com](http://www.industry.com)).

### Box V.5. Environmental impact of TNC activities in the Niger Delta

Oil exploration and production by TNCs has had significant impacts on the environment in the Niger Delta in Nigeria. In this area of natural wealth and extremely low income, environmental degradation and poverty are interlinked, as the poorest people of the Delta are often the worst affected by the environmental impacts of TNCs' oil extraction activities, not only in terms of their health, but also their livelihoods.

Major environmental problems include the destruction of freshwater ecosystems from the construction of canals which has caused saltwater to flow into freshwater zones; oil spills, of which some 5,400 incidents were officially recorded between 2000 and 2004;<sup>a</sup> air pollution resulting from most of the gas produced being flared; and the depletion and illegal logging of forests to enable exploration and production activities by TNCs. In addition, unrecycled and untreated waste generated by oil operators has been discharged onto land, mangrove and freshwater swamps as well as into the sea. However, it is not only TNCs that have caused environmental damage; Nigerian oil firms in the region have also been very lax in their environmental practices (Litvin, 2003).

In some respects, the situation has improved over time. Currently, most foreign facilities have been certified under ISO 14001 relating to environmental management standards. Shell Nigeria, for example, has undertaken a series of investments in gas collection and utilization projects, with a view to eliminating gas flaring by 2009.<sup>b</sup> However, it should be pointed out that the date for ending gas flaring in Nigeria's oil industry has repeatedly been postponed (Idemudia, 2007).

Source: UNCTAD.

<sup>a</sup> See "5,400 spills threaten Niger Delta-Ugochukwu", *Daily Champion*, 24 November 2004, <http://allafrica.com/stories/printable/200411240494.html>.

<sup>b</sup> According to the company, between 2000 and 2005, its gas flaring was reduced by 30%. Shell Nigeria is committed to ending continuous flaring at the Shell Petroleum Development Company of Nigeria joint venture's more than 1,000 wells during 2009 (Shell Sustainability Report 2006, [www.shell.com/nigeria](http://www.shell.com/nigeria)).

site (Peck, 2005), which can lead to various environmental problems such as acid mine drainage, surface and groundwater pollution, soil contamination, landslides due to collapse of waste and tailings dumps (Balkau, 1999). Today, most large TNCs have made substantial progress in restoring mine sites following their closure, and it is mainly the artisanal and small-scale miners that now pose a problem in developing countries (OECD, 2002; Peck, 2005).<sup>68</sup> Nevertheless, the environmental legacy left by TNCs' past mining activities still frequently leads to environmental problems (Danielson and Lagos, 2001), sometimes requiring them to share the responsibility for cleaning up.

In the oil and gas industry as well, TNC activities have had negative environmental impacts. In the Niger Delta in Nigeria, for example, oil spills, the flaring of excess gas and deforestation from oil exploration and production activities by TNCs have had damaging effects on the environment (box V.5). In Equatorial Guinea, on the other hand, oil companies appear to be respecting internationally accepted oilfield practices and environmental standards (World Bank, 2002: 8).

The environmental performance of companies varies. Some TNCs are attaching increasing importance to higher environmental standards when undertaking investments, partly in response to external pressure by various stakeholders, and partly out of self-interest. TNC activities have become more visible, and environmental issues today are

more closely monitored. As a result, those that cause environmental damage face greater reputational and financial risks (Bond and Weber-Fahr, 2002). Growing environmental awareness among the large, established TNCs in both metal mining and oil and gas extraction can be considered a positive development. Accidents still occur, but their environmental practices have generally improved over the past decade. Nowadays, most large mining TNCs apply their home-country environmental standards to their new projects abroad. Many have also established industry-wide guidelines or codes of conduct covering the performance of subcontractors.<sup>69</sup> However, some new entrants in the global extractive industries have emerged from home countries with relatively weak environmental legislation. It is important for these emerging TNCs to implement good practices and apply higher standards of environmental protection, which will benefit both themselves and the host countries in which they operate (chapter VI).

The environmental performance of large, established TNCs is often superior to that of domestic enterprises, particularly of artisanal and small-scale miners (e.g. Ericsson and Norås, 2005). Chile's mining industry, in which State-owned enterprises, TNCs and joint ventures are involved, enables comparisons of their relative performance. Early studies (e.g. Borregaard, Blanco and Wautiez, 1998) highlighted the gap in environmental performance between foreign and Chilean companies in the 1980s and 1990s. But this

gap narrowed in the 1990s (Borregaard and Dufey, 2002). Most of the remaining differences are related to environmental management skills (Ibid.), while concerns related to TNC-operated extractive projects have more to do with the large scale of their projects and, thereby, their larger environmental footprints.

TNCs may introduce and diffuse higher standards and more advanced technologies for environmental protection. Empirical evidence suggests that “FDI in the mining sector can reduce or increase pressures on the environment, as compared with domestic investment, depending on the geographical location and whether regulatory, technology or scale effects are considered” (OECD, 2002: 10). In Peru, foreign investment has stimulated the use of more environment-friendly technologies and catalysed a technological transformation in the country’s mining industry,<sup>70</sup> which has contributed towards a better environmental performance of the whole industry (Pascó-Font, 2000).

The overall environmental impact depends largely on host-country regulations and the institutional competence of governments for implementing them. Given the necessary framework and conditions, favourable effects in terms of improved standards and their diffusion, including through spillovers to domestic firms, could follow. For governments, the challenge is to minimize and manage the environmental stress caused by extractive activities, regardless of whether these are undertaken by domestic firms or by foreign TNCs. Host-country policies and regulatory measures need to be designed and implemented in a way that encourages companies to adopt the highest possible standards of environmental protection and to reduce negative impacts resulting from their activities (chapter VI).

## D. Social and political impacts

The social and political impacts of TNC involvement in extractive industries, more than in other industries, have been the focus of considerable attention. Concerns related to health and safety have consistently presented a challenge to the extractive industries (section D.1). Social concerns often also arise from the relationship between TNCs and the local communities residing in the vicinity of their extractive operations, the influx of migrant workers and various related issues (section D.2). Additional risks are associated with human rights abuses, committed directly or indirectly by TNCs (section D.3). Political problems may stem from disputes over the distribution of the resource revenues,

corruption, and even armed conflict among different groups seeking to benefit from the revenues generated by extractive activities (section D.4). TNCs can introduce higher standards in dealing with various social issues, but they can also become associated with specific problems.

Generalizations are difficult to make, as the outcome depends largely on the specific host-country situation. Negative social and political effects have been observed mainly in mineral-rich, poor countries with weakly governed States. Problems are often associated with the characteristics of certain minerals, poor governance structures, and weak institutional capacities of host countries in the formulation and implementation of laws and regulations.

### 1. Health and safety impacts

TNC activities in the extractive industries can have health and safety impacts not only on people working in those industries (occupational health and safety), but also on nearby communities, for example, through air and water pollution resulting from those activities (discussed in the previous section).<sup>71</sup>

Mining in general has been identified as among the most hazardous industries.<sup>72</sup> However, the occupational safety and health implications vary significantly between different mining activities and countries. In the working environment of a surface mine, for example, airborne contaminants (such as rock dust and fumes), excessive noise, vibration and heat stress can create health problems for mineworkers who are subject to a frequent and prolonged exposure to them. In this context, a distinction can be made between industrial and artisanal mining. TNCs’ extractive activities belong to the former category, and are usually larger in scale, better regulated and safer (Dreschler, 2001). Informal artisanal mining, on the other hand, takes a particularly heavy toll in terms of death and injuries in countries where large numbers of people are engaged in this hazardous activity, due to the lack of controls and regulations.

Historically, coal mining has been associated with major health and safety risks related to slope failure, the collapse of underground mining roofs, gas explosions and unhealthy air quality. Improvements in mining methods and protection technologies have greatly reduced these risks in modern coal mines, where more than 90% of coal is now produced using mechanical automation techniques. In addition to technical improvements, TNCs have transformed their safety record by making safety a priority (Rui, 2005). Therefore,

### Box V.6. Worker safety in coal mines in China

China produces one third of the world's coal output, but accounts for four fifths of the world's coal-mine fatalities. In 2003, the death rate per million tons of coal mined in China was 130 times higher than in the United States, 250 times higher than in Australia and 10 times higher than in the Russian Federation.<sup>a</sup> There has been a significant and widening gap between the safety record of Chinese domestic coal mines and that of coal-mining TNCs worldwide (Rui, 2005 and forthcoming). In the past five years, the situation has improved. However, in 2006, while TNC-operated mines had close to zero deaths per million tons of coal extracted, the average overall rate in China was still more than 2 deaths per million ton, mainly due to a particularly high death rate in township and village enterprises (box table V.6.1).

**Box table V.6.1. Safety performance of different types of coal producers in China, 1999-2006**  
(Deaths per million tons)

Coal producer	1999	2001	2002	2003	2004	2005	2006
Key State-owned enterprises	1.0	1.5	1.3	1.0	0.9	0.9	0.6
Local State-owned enterprises	3.5	4.7	3.7	2.0	2.3	2.0	1.1
Township and village enterprises	11.0	18.5	12.2	13.4	5.6	5.5	4.4
National average	4.5	5.3	4.6	3.6	3.1	2.8	2.0

Source: Rui, 2005 and forthcoming; China National Coal Association, various years.

Source: UNCTAD, based on Rui, 2005 and forthcoming.

<sup>a</sup> Chinese Academy of Social Science, 2006.

<sup>b</sup> Source: State Administration of Work Safety and State Administration of Coal Mine Safety, China ([www.chinasafety.gov.cn](http://www.chinasafety.gov.cn)).

In 2005, 23,000 privately owned and collective-owned coal mines produced 38% of the coal mined in China, but accounted for 70% of related deaths and accidents. The Government acknowledges that the rates of severe and particularly large accidents “were consistently high” (China National Coal Association, 2005). Officially, the number of deaths has been over 4,700 per year since 2000.<sup>b</sup> Unofficial estimates put the numbers even higher, reflecting the fact that township and village mining enterprises usually do not publish details of accidents and deaths.

the incidence of multiple fatalities is now rare in the developed world, and relatively uncommon in TNCs' operations in developing countries. By contrast, domestic coal producers in many developing countries have not yet attached the same priority to safety considerations. For example, in China, over 60% of all coal-mining operations still use non-mechanical methods, resulting in a large number of serious accidents (box V.6).

In the oil and gas industry, the frequency of accidents is lower than in mining and many other industries.<sup>73</sup> However, because the products of the industry are combustible and potentially explosive, accidents such as fires and explosions can have serious consequences. In July 1988, for example, 167 workers were killed when the Piper Alpha North Sea rig of Occidental Petroleum (United States) exploded after a gas leak.<sup>74</sup> After this worst oil-rig disaster in the world, TNCs tightened up their safety procedures. Now, they generally attach greater importance to high safety standards; in many cases, these standards are higher than those of indigenous companies in developing and transition economies. The Sakhalin-1 Project, for example, has had an accident rate which is more than four times lower than the average for the Russian oil and gas industry.<sup>75</sup> In spite of the higher health and safety standards being adopted by TNCs, additional efforts are needed to further reduce the health and safety risks posed by their activities.<sup>76</sup>

## 2. Social impacts on the local community

Local communities are the most directly affected by TNC activities in extractive industries. On the one hand, their well-being can be enhanced by the economic contributions of TNCs, such as job creation and higher incomes, or through improvements to local infrastructure and social services. Such contributions can help reduce local poverty and increase social welfare in absolute terms. On the other hand, there may also be various social costs.<sup>77</sup> These cannot always be attributed to TNCs per se, but to the inherent characteristics of extractive activities. However, given their prominent role in the mineral production of many developing countries (chapter IV), TNCs inevitably become associated with related problems (Ballard and Banks, 2003).

Several factors underlie the social impacts of TNC involvement on the local community. First, adverse social consequences are associated with the relationship between TNCs and local communities within the general area or region where the extractive operations are located. Resource extraction operations are cadastral in that their areas of operation are delineated, which implies that the groups of people living in those areas enter into an economic relationship with the company; they are defined as “landowners” or “mining lease



residents” and gain access to a range of benefits or compensation from the company. The people that reside in the vicinity but outside the lines of demarcation have no such access to benefits and are often marginal in terms of economic relations with the company. Conflicts around the large-scale mining sector that prevail in some developing countries are driven as much by this marginalization, as by the distribution of benefits to the insider groups (Banks, 2007).<sup>78</sup>

There are various sources of potential tension at the community level, including the use and management of land, the relocation of people (including indigenous populations), and accordingly the loss of land and livelihoods.<sup>79</sup> Indeed, the latter has been the main grievance against mining activities in Indonesia. For example, in the construction of the Kelian Mine in Indonesia by Rio Tinto (United Kingdom) and the local PT KEM, the land and assets of the local people were expropriated; some were compensated, but at rates considered unfair by the community (Oxfam Community Aid Abroad, 2001). In the case of the Soroako project in South Sulawesi, Indonesia operated by Inco (Canada), much of the agricultural land adjacent to the mine was requisitioned for the mine’s infrastructure, including an airport, a sports oval and a golf course. Local communities were excluded from negotiations regarding the land, and compensation for the acquired land was perceived to be inadequate (Ballard, 2001). When the communities are included, it can spark off internal disputes and questions about identity as people strive for recognition as “landowners” to claim eligibility for compensation (Banks, 2005). Moreover, social problems may erupt as a result of disagreements over compensation. In the cases of the Kelian Mine in Indonesia and the Bulyanhulu Mine in the United Republic of Tanzania, for example, it was alleged that the relocated people experienced a dramatic fall in their living standards due to inadequate compensation (Oxfam Community Aid Abroad, 2001; Extractive Industries Review Secretariat, 2003).

In addition, large mines usually need ample and stable supplies of electricity, water and other utility services. When TNCs’ mining operations are in regions where these services are inadequate or unreliable, competition for them may create tensions between the TNCs and the local community. Furthermore, crowding-out effects on artisanal miners may trigger conflicts between foreign and domestic operators. For example, the displacement of artisanal gold miners in the United Republic of Tanzania has exacerbated conflicts between them and those that have displaced them (Hilson and Potter, 2005). For indigenous peoples who usually live in vulnerable environments, TNC activities in

extractive industries may threaten their culture and interdependence with biological diversity, disrupt their traditional lifestyles and affect their social welfare (box V.7).

TNC entry may also create tensions between local communities and migrant workers. As noted above, there is often a need to bring in workers from other parts of a host country, or expatriate workers, to operate a large mine. This can lead to a reconfiguration of local social structures, relationships and identities. Some studies suggest that FDI in mining operations in the United Republic of Tanzania is a “successful vehicle for social integration”, as the mining firms attract labour from all over the country (Kulindwa et al., 2003), while others have a much less positive assessment of their impact on local communities (George, 2003). With or without TNC involvement, the influx of migrant workers, contractors and others linked to large extractive projects can be socially disruptive for local communities (Banks, forthcoming), sometimes causing them to suffer from various social pathologies, such as increasing levels of alcoholism, prostitution, gambling, violence and lawlessness, as well as diseases, including HIV/AIDS.<sup>80</sup>

Social problems can also be associated with the closure of mines operated by TNCs (e.g. the Misima mine in Papua New Guinea and the Kelian mine in Indonesia). After deposits are exhausted or become uneconomical to extract, and TNCs close their operations and leave, local populations might be left with no alternative employment opportunities, a scaled down infrastructure and destroyed land. For instance, one of the issues for the joint venture involving TNCs at the Porgera gold mine in Papua New Guinea is how to facilitate and improve the scope for small-scale mining once its large-scale operations end (Banks, 2007).

In response to such challenges, more and more TNCs are becoming aware of the social effects of their activities. In the context of responsible investment, they have been focusing on meeting the needs of local communities in order to obtain a social licence – an implicit *de facto* licence for mining from civil society (in addition to an explicit *de jure* licence from the State). Accordingly, extractive-industry TNCs are frequently helping local communities improve roads, health and education facilities and water systems. Some improvements have resulted in limited or only short-term benefits for communities, while others make positive contributions over longer periods:

- In Botswana, two major mining companies (Debswana and BCL) have invested extensively in health and education facilities in local communities. Both companies operate hospitals



### Box V.7. Social impacts of extractive-industry TNCs on indigenous peoples: selected cases

Indigenous peoples usually live in vulnerable environments that may also constitute reservoirs of biodiversity. A large number of them still occupy their traditional lands, and rely on subsistence activities such as hunting, fishing, trapping, gathering or herding. Their survival depends on the survival and sustenance of their ecosystems. The land is also at the core of their collective identity and spirituality. Yet many TNC activities in extractive industries take place in areas inhabited by indigenous peoples, and they can have serious environmental impacts on those areas, as noted earlier, affecting the inhabitants' livelihoods and way of life. The loss of biodiversity or alteration of their ecosystems as a result of TNCs' activities can therefore have dramatic consequences.<sup>a</sup> In addition, various cases of abuse and violations of their social, cultural, economic, civil and political rights have been reported.<sup>b</sup>

*Ok Tedi mine in Papua New Guinea.* The Ok Tedi copper and gold mine<sup>c</sup> is located in the Star Mountains of Papua New Guinea, an area inhabited mainly by indigenous peoples. Since the late 1980s, almost 2,000 square kilometres of downstream lowland rainforest has been flooded and destroyed by tailings and waste rock from the mine. This has caused environmental and social harm to the 50,000 people who live downstream of the mine. Their means of subsistence and activities have been disrupted as a result of heavy water effluents, and air and soil contamination generated by the mining operations. Various indigenous peoples have suffered from chronic illnesses, including rashes and sores caused by pollution. In 1994, 30,000 landowners from Papua New Guinea brought a legal claim against the mining company BHP (now BHP Billiton). A negotiated settlement worth approximately \$500 million in compensation and commitments to tailings containment was reached in June 1996, though this may not have been entirely successful in addressing the issues (Kirsch, 2007).

*ChevronTexaco's oil operations in Ecuador.* From 1964 to 1992, Texaco (now part of Chevron) built and operated oil exploration and production facilities in the northern region of the Ecuadorian Amazon. Before the oil company arrived, an area of more than 400,000 hectares was pristine rainforest, with six indigenous communities and about 30,000 indigenous peoples living in the natural environment. Heavy pollution caused by oil extraction, production and transportation had serious consequences. The construction of exploration roads was followed by an influx of settlers who damaged the surrounding forests through logging, extensive agriculture and the introduction of domestic animals. In addition, the new settlers and foreign workers introduced various diseases among the indigenous communities. The result was an exploding health crisis among the region's indigenous and farming communities, including rising levels of cancer, reproductive problems and birth defects.

*The Chad-Cameroon pipeline project and the Bagyéli people.* The Chad-Cameroon pipeline project involves a consortium of companies: ExxonMobil (United States) is the operator, with 40% of the private equity, Petronas (Malaysia) has a share of 35% and Chevron (United States) has 25%.<sup>d</sup> The 1,070-kilometre pipeline cuts through some of Africa's old growth tropical rainforest and through the villages of the Bagyéli indigenous communities. These communities depend on the forest and forest products for their subsistence-based lifestyle. Less than 5% of the affected Bagyéli are employed in the pipeline project. However, its impact on their social welfare has been considerable. Increased logging, the loss of water resources, and noise and river pollution have damaged their hunting grounds and fishing areas; while the destruction of the surrounding forest and medicinal plants have caused cultural and health problems.

*Source:* UNCTAD, based on Kirsch, 2002 and 2007; Forest Peoples Programme, at: [www.forestpeoples.org](http://www.forestpeoples.org); and AmazonWatch, at: [www.amazonwatch.org](http://www.amazonwatch.org).

<sup>a</sup> See conclusions of the 2001 OHCHR workshop on indigenous peoples, private sector natural resource, energy and mining companies and human rights (United Nations Document No. E/CN.4/Sub.2/AC.4/2002/3).

<sup>b</sup> See the report of the Special Rapporteur on indigenous people (United Nations Document No. E/CN.4/2003/90)

<sup>c</sup> The Ok Tedi mine is operated by Ok Tedi Mining Ltd (OTML) which is majority-owned by the PNG Sustainable Development Program Limited (PNGSDP). Prior to 2002, it was majority-owned by BHP Billiton. PNGSDP is the result of an agreement between BHP Billiton and the Papua New Guinea Government. Under the agreement, all of the dividends from OTML that would once have gone to BHP Billiton now go to PNGSDP, which has the role of spending profits from the mine wisely on development in Papua New Guinea. As a company "limited by guarantee", PNGSDP does not have shareholders (see <http://www.pngsdp.com/companyprofile.html>; PNGSDP, Annual Report 2002).

<sup>d</sup> The project also benefited from World Bank and IFC loans.

- that are open to both company employees and the general public. Debswana has been actively addressing the HIV/AIDS problem, and was the first company to provide anti-retroviral therapy (ART) to employees and family members free of charge (UNCTAD, 2007i).<sup>81</sup>
- In Chile, Minera Escondida donates 1% of its pre-tax income to corporate social responsibility-related projects in the country (UNCTAD, 2007j).
- In Indonesia, Freeport-McMoRan Copper & Gold has been donating 1% of its gross revenues to support community development projects at the village level. Since 1996, it has contributed \$61 million to the Freeport Fund for Papua Development, a programme managed together with an NGO and the leaders of local tribes and churches (Erman and Aminullah, 2007).

- In the United Republic of Tanzania, some mining TNCs have launched specific social investment programmes in various areas such as health and education to increase the well-being of local communities. The total expenditures were \$30 million for the period 1999-2005.<sup>82</sup>

TNC involvement in local community development is not without its problems. One issue is whether it causes some States to abdicate some of their core functions, such as providing basic education or health care. A firm's investment in social infrastructure may be motivated by factors other than advancing the best interests of the local community; it may respond to the priorities of specific government officials rather than to those of the wider community. Or their investment may serve to assuage local fears and serve public relations purposes. Community development projects should identify the needs of the local community through a needs assessment exercise conducted prior to the inception of a project. However, this may not always happen. For example, according to one study, some of the schools, hospitals and clinics built in Sudan by Petrodar Operating Company (British Virgin Islands),<sup>83</sup> appeared not to be "primarily designed to serve the needs of the people" and to "remain poorly utilised or even empty" (ECOS, 2006: 23). This might be avoided by linking community development programmes of TNCs to the development planning processes of local governments (Frynas, 2005: 583-587).

### 3. Human rights implications

TNC participation in extractive industries has been criticized as having a potentially adverse impact on the human rights situation in some host countries. Alleged human rights abuses include the disappearance of people, arbitrary detention and torture, loss of land and livelihoods without negotiation and without adequate compensation, forced resettlement, the destruction of ritually or culturally significant sites without consultation or compensation and labour rights violations. In other instances, the dislocation of local populations has been linked to crimes against humanity.

In a survey of alleged corporate human rights abuses, as many as two thirds of the total of 65 abuses reported by NGOs were related to the extractive industries (United Nations, 2006), and they occurred mainly in poor countries with weakly governed States. As noted by the Special Representative of the Secretary-General of the United Nations on human rights and transnational corporations and other business enterprises: "there is clearly a negative symbiosis between the worst corporate-related human rights abuses and host

countries that are characterized by a combination of relatively low national income, current or recent conflict exposure, and weak or corrupt governance" (Ibid., para. 27).

According to the same survey, a variety of the alleged violations of human rights were committed by public (often government-controlled) and private security forces protecting company assets.<sup>84</sup> The use of such forces by some TNCs in weakly governed States or conflict zones has prompted concerns regarding the use of indiscriminate force.<sup>85</sup> There have been many reported abuses by private security forces,<sup>86</sup> as well as a large number of charges against private firms acting on behalf of TNCs.<sup>87</sup> Another problem occurs when TNCs rely on State forces to provide security. While these forces may be under the control of a host-State entity, TNCs might still be held accountable for their behaviour when they support their actions either by paying their salaries, or providing intelligence or other services such as transportation.

### 4. Corruption, conflict and other political issues

TNCs in extractive industries are more likely than those in other industries to retain a presence in conflict zones, because these areas are often endowed with minerals associated with high rents. TNC participation can reinforce adverse political impacts, often related to the distribution of resource revenues. The quality of governance is a key factor in determining whether a mineral-resource-rich country will succumb to such interrelated political problems as disputes over the resource rent, corruption, or even armed conflict or war.

Corruption is often endemic in societies that rely on extractive industries as their main source of income – with or without TNC involvement (Leite and Weidmann, 2001; Ross, 2001; Sali-i-Martin and Subramanian, 2003: 9). TNCs can add to the problem by adhering to non-transparent business practices, for example in host countries that treat the amount of revenues generated by extractive industries as a State secret (Catholic Relief Services, 2003: 1). TNC participation may not only add to corruption in a country; it can also extend support to authoritarian regimes, for example by providing governing elites with access to funds (Shankleman, 2006: 3).

Many conflict-prone States are desperately poor, despite significant mineral resources (UNDP, 2005: 165). TNCs are often the only avenue for some of them to exploit their resource wealth. But a foreign investor and the resulting inflows of revenue can contribute indirectly to conflict by sustaining regimes that fail to address socio-economic

and political grievances and/or by providing an economic incentive for the conflict. TNCs investing in conflict-prone areas might be confronted by various stakeholders fighting for control of the resource rent. A TNC's decision to support local communities by investing in a particular region might arouse the envy of other groups, thereby unintentionally fuelling secessionist movements and/or providing support to one ethnic group over another. TNC participation may also sustain conflicts by unintentionally financing combatants (International Peace Academy, 2004).

The link between conflicts and extractive-industry TNCs is indirect, with governance failure at the central and local levels being the mediating variable. TNCs might become the target of local turmoil, for example, if promised improvements and contributions are not realized. In the case of Shell in Nigeria, it was agreed between the central and the local governments that an increased share of revenues from oil exploration would flow to the local governments, which in turn would provide local services (Litvin, 2003). However, little of this additional revenue found its way into local development projects. As a result, activists in the Niger Delta targeted Shell, which has a local presence, whereas the Government is based far away in the capital (UNDP, 2006b).

The existence of human rights violations and/or conflict situations highlights the dilemma faced by TNCs when deciding whether or not they should engage in operations in a certain country. The mere presence of foreign investors may contribute indirectly to the maintenance or prolongation of a conflict. The issue has been highlighted in the case of Sudan, where some companies have chosen to divest while others have entered.<sup>88</sup> More research is needed to clarify under what circumstances it is appropriate for a company to operate in countries characterized by conflict or serious human rights violations.

## E. Conclusions

As in other industries, the involvement of TNCs in extractive industries may assist or hamper the achievement of various development objectives. At best, it can put a host country on a faster development track; at worst it can accelerate a vicious circle of negative results. The net outcome depends on such factors as the mineral extracted, the behaviour of the TNC involved and the country's institutional capacity to regulate and monitor its extractive industries. Host-country policies and institutions are crucial in this context, as they shape the relationship between TNCs and various

stakeholders, influence the behaviour of TNCs and determine how the resource rent will be shared. Without a well-developed institutional framework, there is an increased risk that economic benefits from mineral extraction will be outweighed by environmental and social costs, resulting in few, if any, benefits (chapter VI).

Many of the underlying determinants of the economic performance of resource-rich countries are not directly related to TNCs. Therefore, the involvement of extractive-industry TNCs per se may not be the main factor explaining the net outcome of resource-based development. TNCs can, however, improve the overall performance of the extractive industries by contributing capital, technology and management skills and, as a result, boost output, exports and government revenues. They can also complement domestic investment and expose local companies to competition. Moreover, responsible TNCs may be better placed to address adverse environmental and social impacts of their activities. But there can also be drawbacks to their presence in developing countries that are related, for example, to their ownership and control over production and revenues, transfer pricing, limited local procurement and linkages and various adverse environmental and social impacts of their activities, as well as to the unequal bargaining power of host-country governments vis-à-vis the TNCs.

Some new extractive-industry TNCs originate in home economies with less stringent regulations in the social and environmental areas. Moreover, they may not be subjected to the same level of public scrutiny (e.g. by media and civil society) as other companies (*WIR06*). A number of them operate in host countries which other TNCs are, for a variety of reasons, less likely to operate in (chapter IV). The overseas expansion of these newcomers is a recent phenomenon, and relevant data for systematic comparisons are lacking. As their foreign activities are expected to expand, however, they would likely benefit from an increased awareness of how to address various social and environmental issues associated with their activities abroad.

The most positive outcomes of resource extraction have been achieved in countries with well-functioning institutions, where the development of industries has involved the active participation of domestic enterprises rather than only TNCs. Low-income countries that lack adequate domestic resources and productive capabilities are the most in need of the package of assets that TNCs can offer: foreign capital, know-how, technology and skills. At the same time, weak domestic capabilities often limit their ability to reap various benefits from the entry and operations of TNCs. This weakness also places them in a less favourable position in



negotiations with foreign investors and reduces their opportunities for securing wider economic benefits through linkages and spillovers. Government policies therefore need to address not only the manner of participation of TNCs in the extractive industries, but also the capabilities of domestic companies in those and supportive industries.

The chances of benefiting from TNC participation in the extractive industries increase if host governments have a long-term plan concerning natural resource extraction, and an effective,

mechanism for ensuring that the benefits accruing are fairly shared by the various stakeholders. Governments also need to invest some of the revenues earned from mineral extraction in building the economic and social infrastructure needed for sustainable development. The challenge is to take advantage of what TNCs can offer as a catalyst for industrial and economic growth while minimizing the costs. In particular, when designing institutions and policies, social and environmental concerns need to be balanced against economic considerations.

## Notes

- 1 The shares of minerals in the total exports of China and India during the period 1990–1999 were 1.9% and 3.8% respectively, which are the lowest among 51 developing countries with significant mining industries (World Bank and IFC, 2002).
- 2 Minera Escondida has the largest copper production in the world. It is owned by BHP Billiton (Australia) (57.5%), Rio Tinto (United Kingdom) (30.0%), JECO Corp. (Japan) (10.0%) and IFC (2.5%) ([www.escondida.cl](http://www.escondida.cl)).
- 3 “Latin America: beating the oil curse”, *Business Week*, 4 June 2007.
- 4 It has been estimated that in the Russian Federation \$900 billion in investments would be required to increase the current output of 9 million barrels of oil per day to 10.5 million barrels per day by 2030, see “A side door to Russia’s oil fields Moscow’s need for Western technology could lower barriers”, *International Herald Tribune*, 13 May 2006.
- 5 *Source*: Ministry of Energy and Mining, Government of Peru.
- 6 See, for example, “The wealth underground: Bolivian gas in State and corporate hands”, *Znet*, 8 May 2006 ([www.zmag.org](http://www.zmag.org)). See section II.A.3 for the latest trends in the nationalization of Bolivia’s oil and gas industry.
- 7 For example, Rosneft raised some \$10 billion through an IPO.
- 8 The initial capital of the proposed bank will come from the foreign exchange reserves of several Latin American countries, including Argentina, Bolivia, Brazil, Ecuador, Paraguay and Venezuela. These reserves have substantially increased since 2004 partly as the result of the commodity price boom. It has been proposed that all member countries contribute fairly equal shares to the Bank’s initial capital. Among others, it has been announced that it could provide finance for the gas pipeline project from Argentina to Bolivia (See “Banco del Sur to start up in IH07”, 1 May 2007, at: [www.rigzone.com](http://www.rigzone.com)).
- 9 For example, the Camisea Project is owned by a gas production and gas pipeline consortium, TGP, which has received a loan of \$109 million from the Brazilian Development Bank (BNDES).
- 10 Heavy crude oil is any type of crude oil which does not flow easily. Its production is usually difficult, requiring a variety of enhanced oil recovery techniques.
- 11 See “Venezuela moves to nationalize its oil industry”, *Power and Interest News Report*, 19 May 2006 ([www.pinr.com](http://www.pinr.com)).
- 12 See “CNOOC: limited room in the down stream, deep-sea technology still weak”, 25 April 2005 (<http://biz.ec.com.cn>).
- 13 Different activities along the extractive value chain have different degrees of labour intensity and require different types and levels of skills and competencies. Most job opportunities usually arise in construction and extraction occupations, followed by other blue-collar occupations in production, transportation (including of materials), and installation and maintenance, as well as various management and professional occupations, such as engineers and technicians (Bureau of Labor Statistics, United States Department of Labor, [www.bls.gov](http://www.bls.gov)).
- 14 For example, in 2003, every \$1 million of United States outward FDI stock in the extractive industries in developing countries was related to 2.5 jobs, compared with 23.8 jobs in manufacturing (table I.6).
- 15 In metal mining, for example, surface mining operations that dominate TNCs’ extractive activities are particularly capital-intensive.
- 16 In some developing countries, artisanal and small-scale mining, which is labour-intensive, contributes significantly to employment creation (chapter III).
- 17 Mining companies employ somewhat more people, as employees not directly engaged in mining activities are classified under other economic activities.
- 18 *Source*: National Institute of Statistics and Information of Peru.
- 19 See “Sakhalin Energy 2006” ([www.sakhalinenergy.com](http://www.sakhalinenergy.com)) and “Shell v Russia 2007” (<http://www.shell.com>).
- 20 See section D for related social problems.
- 21 See “CNOOC: limited room in the down stream, deep-sea technology still weak”, 25 April 2005 (<http://biz.ec.com.cn>).
- 22 Although their marketing advantages for distributing minerals may not be as important as in distributing consumer goods, foreign affiliates in mining often have advantages over local firms in host developing countries in accessing and serving foreign markets.
- 23 In Botswana, for example, mineral extraction driven by TNC participation has had a strong impact on exports, which rose from \$15 million in 1969, prior to the start of mineral exports, to \$4.4 billion in 2005. Minerals now dominate the country’s exports, with diamonds accounting for 78% of total exports during 2001–2005 (*Source*: Central Statistics Office of Botswana).
- 24 *Source*: Chilean Central Bank and ECLAC Yearbooks.
- 25 *Source*: Central Statistics of Zambia.
- 26 *Source*: Ministry of Energy and Minerals and National Bureau of Statistics, United Republic of Tanzania.
- 27 Mineral rents reflect the difference between the market price of the minerals and the relevant costs, including the costs of exploration, production and any necessary processing (processing or treatment required to make transportation economically feasible), as well as a certain (“normal”) return on investment.
- 28 The government’s “take” refers to the proportion of the undiscounted net revenues generated over a project’s lifetime that is captured through the fiscal system.
- 29 In Mali, the 1991 mining code provided mining companies a 5-year tax holiday after first production. The mining code revised in 1999 abolished the tax holiday, but the stability guaranteed by the mining convention meant that the companies could opt to remain under the previous fiscal rules (Cole-Baker, 2007).
- 30 In the oil and gas industry (as in the metal mining industry), information on tax payments by TNCs is seldom disclosed on a country-specific basis (Save the Children, 2005).
- 31 Comparing tax payments with export revenues can be misleading as the latter is a gross measure that includes the cost of production.
- 32 *Source*: Chilean Copper Commission and the Ministry of Finance of Chile. Data on non-copper mineral exports are not available.
- 33 During the period 2004–2005, total copper exports of the 10 largest private mining companies amounted to \$16.6 billion,

- and their tax payments totalled \$2.7 billion (Source: Chilean Copper Commission and the Ministry of Finance of Chile).
- 34 *Source:* Bolsa de Valores de Lima ([www.bvl.com.pe](http://www.bvl.com.pe)) and Superintendencia Nacional de Administración Tributaria ([www.sunat.gob.pe](http://www.sunat.gob.pe)).
- 35 *Source:* Ministry of Energy and Minerals, United Republic of Tanzania.
- 36 *Source:* Central Statistical Office of Zambia.
- 37 In Bolivia, for example, in an interview the Minister of Mining, Guillermo Dalence, called the \$45 million received in tax revenue a “ludicrous amount” compared with the recorded mining exports of \$1 billion in 2006. See “Bolivian official calls for 600% mining tax increase”, *Resource Investor*, 8 January 2007 ([www.resourceinvestor.com](http://www.resourceinvestor.com)).
- 38 Even without accelerated depreciation, operations may take a long time to show any profits, particularly if companies are allowed to carry over losses to subsequent years.
- 39 In addition, another \$125 million was collected in 2006 following the introduction of a royalty tax on mining companies in 2004.
- 40 *Source:* Chilean Copper Commission.
- 41 These companies represent over 80% of the global metal mining industry by capitalization.
- 42 Governments have also collected indirect tax revenues, such as import duties, property taxes and royalties.
- 43 For example, United States, the home country of ALCOA, accounted for 14% of the company’s income from continuing operations in 2004, but for 30% of the company’s total current income tax payment (ALCOA, Annual Report 2005).
- 44 See, for example, Campbell, 2004; UNRISD, 2005; Christian Aid, 2007.
- 45 For example, labour unrest has been a continuing problem for Grupo México, with strikes occurring during 2004 and 2005 at each of its divisions. In some cases, disputes concerned labour contract renewals; in others, potential job losses triggered the discontent. In mid-2006, the company was once again strike-bound, with both its Cananea and La Caridad copper operations affected, as well as its San Martin polymetallic mine.
- 46 El Abra is the first important joint venture between a foreign company and Codelco. Phelps Dodge and Codelco own 49% and 51%, respectively, of the venture.
- 47 However, the bargaining between the two is not a zero-sum game, as some kinds of collaborative strategies can increase the overall size of the rents to be divided and increase the absolute level of returns to all parties. The specific policy choices and institutional arrangements are the outcome of the interplay of domestic groups trying to maximize their own interests as well as the national interest.
- 48 See also chapters III and VI.
- 49 Governments also need to avoid using the revenue or expectations of more revenue to increase borrowing as this may exacerbate the symptoms of Dutch disease by adding to the appreciation of the real exchange rate. See also chapters III and VI.
- 50 In developing and transition economies where State-owned enterprises play an important role, especially in the oil and gas industry, the cost of monopoly in terms of efficiency loss can be high. For example, in six oil-producing countries in which a State-owned company has dominated the oil and gas industry, the lack of competition has resulted in lower efficiency in upstream activities (Heum et al., 2003).
- 51 Oilfield services include a wide range of operation and management services in the exploration, production and distribution processes. According to an estimate by the African Export Import Bank, oilfield services now account for 90% of the total cost of producing one barrel of oil (UNCTAD, 2006d).
- 52 Minera Escondida, which accounted for 24% of total copper production in Chile in 2005, was planned from the outset to supply, among others, the overseas refineries of JECO Corp. (Japan) that partly financed the investment (Dietsche et al., 2007a).
- 53 For example, Rio Tinto (United Kingdom) must build roads, a new port and power and water supply systems in order to develop an ilmenite mine in Madagascar (“Madagascar is becoming an attractive mining destination”, *New Frontiers*, 15 March 2007).
- 54 At Lumwana, a new township of 20,000 houses, together with schools, health centres and police services, is planned as an additional investment. In the Solwezi district, near the Kansanshi mine, a great expansion of social services is under way in the form of new housing developments, road rehabilitation and improvements in the supply of education, health and other social amenities (UNCTAD, 2007g).
- 55 Deirdre Lewis (CSA Group), personal communication, July 2007.
- 56 See “Sakhalin-1 Project 2007” ([www.sakhalin1.com](http://www.sakhalin1.com)); “Sakhalin Energy 2006” ([www.sakhalinenergy.com](http://www.sakhalinenergy.com)); “Exxon Mobil” (2006) ([www.businesswire.com](http://www.businesswire.com)); “Shell v Rossii” (2007) ([www.shell.com](http://www.shell.com)).
- 57 The benefits of the investments in infrastructure related to Minera Escondida were limited simply because the mine’s location is in a desert with few settlements (Dietsche et al., 2007a).
- 58 Botswana’s foreign exchange reserves are among the largest in the world, relative to the size of the economy; this is a major factor that has helped earn the country an investment grade credit rating by Moody’s, and Standard & Poors (UNCTAD, 2007i).
- 59 FDI inflows to Chile in 2006 were \$8 billion, of which reinvested earnings accounted for 93% (chapter II).
- 60 See, for example, Sachs and Warner, 1999; and Murphy, Shleifer and Vishny, 2000.
- 61 One concern is related to the “trap of specialization” and its implication for industrialization. In addition to the negative effect of the appreciation of the real exchange rate of local currency on exports, the stimulated oil and non-tradable sectors may pull resources from other sectors. That makes the economy specialized in the primary sector and causes the manufacturing sector to shrink, a typical “Dutch disease” syndrome.
- 62 The distribution of income gains from improving terms of trade can be largely captured by examining the difference between GDI and GNI. Accounted for by net factor payments abroad, the difference can be considerable in countries where the income effects of terms-of-trade changes are associated with changes in FDI income (UNCTAD, 2005c: 104).
- 63 Indeed, much of the early debate on the environmental impacts of TNCs in developing countries focused on the extractive industries, largely because of the highly visible “environmental footprints” left by some extractive projects in which they were involved (*WIR99*: 291).
- 64 For example, technologies used for extracting diamonds from kimberlite pipes in Botswana have much less of an environmental impact than those used for extraction from alluvial deposits. In general, open pit mines tend to be more environmentally damaging than underground mines.
- 65 The public image of mining TNCs was adversely affected during the 1990s by a number of widely publicized spills from tailings dams, including in Guyana (1995) and the Philippines (1996) (*WIR99*: 291). Tailings are the fine particles produced by the processing of minerals, which involves the use of acid and heavy metals that can leach into water supplies, and the dust containing these particles can adversely affect health and the environment.
- 66 In the reform era after 1998, the Ministry of Forestry drafted a new forestry bill, which included a ban on mining in forest conservation areas.
- 67 In surface mining, the layers of soil or overburden that are removed to open up the mine are usually used to fill it in and reshape the land after its closure. Underground mining does not require an extensive reclamation process; however, it is still important to ensure that water remains uncontaminated and that abandoned mines will not collapse.
- 68 For example, abandoned pits and shafts over a large area of unregulated artisanal mining in West Africa have posed a risk to local populations and animals (Balkau, 1999).
- 69 For example, members of the International Council of Mining and Metals subscribe to a set of industry-wide principles to promote more environment-friendly investments (see [www.icmm.com](http://www.icmm.com)).



- <sup>70</sup> For example, increased use of hydrometallurgical processes have lower environmental impacts than the pyrometallurgical processes used previously, because they use less water and have no air emissions (Borregaard and Dufey, 2002).
- <sup>71</sup> For example, the dangerously high lead levels found in children's blood in communities living in La Oroya, Peru are attributed to the mining and smelting operations of Doe Run Corporation (United States) (<http://www.blacksmithinstitute.org/site10e.php>).
- <sup>72</sup> According to the ILO, "especially hazardous sectors" include agriculture, construction, fishing, mining and shipbreaking industries, as well as the informal sector ([www.ilo.org/public/english/protection/safework/hazardwk/index.htm](http://www.ilo.org/public/english/protection/safework/hazardwk/index.htm)).
- <sup>73</sup> See ILO, "Sector activities: oil & gas production" ([www.ilo.org/public/english/dialogue/sector/sectors/oilgas/safety.htm](http://www.ilo.org/public/english/dialogue/sector/sectors/oilgas/safety.htm)).
- <sup>74</sup> "Oil industry defends its safety record", *The Guardian*, 13 December 2005.
- <sup>75</sup> See "Sakhalin-1 Project 2007" ([www.sakhalin1.com](http://www.sakhalin1.com)) and "Exxon Mobil" (2006) ([www.businesswire.com](http://www.businesswire.com)).
- <sup>76</sup> For example, BP (United Kingdom) has been involved in a number of incidents in recent years. In 2005, an accident at a refinery in Texas City, United States, killed 15 workers and injured many more. In 2006, an oil spill of between 200,000 and 300,000 barrels of oil was detected on the Trans-Alaska Pipeline, which is maintained by BP, and in the Gulf of Mexico cracks in oil platform equipment were found on the seabed (See "BP's credibility gap", *International Herald Tribune*, 12 August 2006).
- <sup>77</sup> Many of these costs are related to perceived unfairness and growing inequalities. For example, increasing inequality around a large-scale mine has been conceived in terms of four overlapping and intersecting axes: geography, hierarchy, gender and identity (Banks, 2005).
- <sup>78</sup> For example, at the Porgera mine in Papua New Guinea, those groups living within the Special Mining Lease received substantial compensation, while those outside did not. This inequality of treatment created friction among the people of the Porgeran community (Biersack, 2006).
- <sup>79</sup> Land is central to the livelihoods and cultures of many communities, especially those living in remote areas, and when they are affected by mining operations compensation and employment can seldom provide an acceptable alternative (see, for example, Robinson, 1991).
- <sup>80</sup> For example, the Chad-Cameroon pipeline project has been accompanied by increasing alcoholism and prostitution, and there has been a marked increase in the rate of HIV/AIDS infections along the pipeline corridor (Horta, Nguiffo and Djiraibe, 2007).
- <sup>81</sup> Debswana's hospitals at Jwaneng and Orapa are now specialized infectious disease care centres, which provide local communities with ART and related treatment in partnership with the Government of Botswana (UNCTAD, 2007i).
- <sup>82</sup> *Source*: Ministry of Minerals and Energy, the United Republic of Tanzania.
- <sup>83</sup> Petrodar Operating Company is owned by CNPC (China) (41%), Petronas (Malaysia) (40%), Sudan Petroleum Company (8%), Sinopec (China) (6%) and Al Thani Corporation (United Arab Emirates) (5%) ([www.petrodar.com/profile.html](http://www.petrodar.com/profile.html)).
- <sup>84</sup> Local artisanal miners have sometimes become victims. For example, in the Obuasi gold-mining project undertaken by AngloGold Ashanti in Ghana, force was allegedly used to keep artisanal miners out of the company's lease area, resulting in the deaths of some of these miners (ActionAid, 2006). However, AngloGold Ashanti stated that its security staff fully respected human rights (see response of AngloGold Ashanti to ActionAid report concerning Obuasi, Ghana, 7 October 2006, at: [www.reports-andmaterials.org](http://www.reports-andmaterials.org)).
- <sup>85</sup> For example, the Grasberg mine operated by Freeport (now part of Freeport-McMoRan Copper & Gold) in Indonesia was allegedly involved in the extrajudicial killing by the Indonesian military of as many as 200 people between 1975 and 1997; almost all of them were unarmed civilians (Ballard, 2001).
- <sup>86</sup> A presentation by the Business and Human Rights Resource Centre to the meeting of a United Nations Working Group on the use of mercenaries listed a number of alleged human rights abuses committed by private security companies in the service of mining TNCs (<http://www.reports-and-materials.org/BHR-statement-to-UN-Working-Group-on-mercenaries-21-Feb-2007.doc>).
- <sup>87</sup> Business and Human Rights Resource Center, "Private security companies and human rights", Public seminar co-hosted by the Business and Human Rights Resource Centre and the United Nations Working Group on the use of mercenaries as a means of violating human rights and impeding the exercise of the rights of peoples to self-determination, 21 March 2007, Geneva, Switzerland.
- <sup>88</sup> For example, due to pressure from NGOs and their shareholders, Talisman Energy (Canada) in October 2002 divested its ownership interest in an oil extraction project to ONGC Videsh (India) (Manhas, 2007). Lundin Petroleum (Sweden) in June 2003 sold its rights to explore for and produce oil and gas in one concession (Block 5A) to Petronas (Malaysia) but retained an ownership stake in another (Block 5B) (Batruch, 2003; Human Rights Watch, 2003).

# CHAPTER VI

## THE POLICY CHALLENGE

There have been significant changes in the role of TNCs in the extractive industries since the 1960s, some of them triggered by policy shifts in host countries.<sup>1</sup> These firms operate in most of the mineral-rich countries today, under different contractual arrangements and to varying degrees (chapter IV). Many low-income countries have to rely on TNCs' capital, know-how and management skills for the extraction of their mineral deposits, but there are concerns related to some of the economic consequences of this reliance; a major issue has to do with the sharing of the revenues generated. There is also growing awareness of the need to address the environmental and social impacts of extractive activities, with or without the involvement of TNCs. Indeed, after decades of resource extraction, the transformation of dormant mineral deposits into sustainable development gains remains a demanding undertaking in many countries (chapter V).

This chapter takes stock of recent policy developments, at national and international levels, and considers policy options available to host developing countries to enhance their gains from TNC involvement. Section A discusses some of the government policies and actions needed to meet the governance challenge. They are not necessarily directly related to TNCs per se, but rather to the overall governance framework and to policies and institutions for the extractive industries in particular. Section B examines how countries regulate the entry and operations of TNCs in different extractive industries. Section C discusses ways in which countries might increase their share of the rents from the extractive industries by changes in their relevant policies and institutional frameworks, particularly their fiscal regimes; it also examines the

implications of regulatory changes. Section D looks at ways of promoting linkages, skills development and technology transfer. Policies to address potential environmental, social and political costs are explored in sections E and F, and section G concludes.

### A. The broader government policy and institutional framework

Government policies and institutions pertaining to extractive industries are a critical factor for ensuring sustainable development gains from mineral extraction, with or without TNC involvement (chapters III and V). Efficient management of a mineral-based economy requires well-developed capacities for governance and a commitment to the objective of sustainable development on the part of a country's leaders and policymakers (Auty, 2001b; Bergesen, Haugland and Lunde, 2000). However, in a number of mineral-rich countries, government policies may be aimed at short-term gains rather than long-term development objectives. Furthermore, the distribution and use of the host country's share of mineral revenues may pay little attention to development considerations. In the worst-case scenario, easy access to revenues from mineral resources can make governments less accountable to their constituents (Moore, 2000) and their actions more likely to be aimed at preserving the interests of a small governing elite.<sup>2</sup> The entry of TNCs in such countries can enable ruling elites to prolong their stay in power and misuse a country's assets, with limited benefits for the people at large.



As with other economic activities, it is important to develop and maintain a governance framework based on the rule of law, and supporting institutions that provide an environment in which companies have incentives to invest in productive activities. Beyond the overall governance framework, countries need institutions and policies geared specifically to the extractive industries. Key elements should include (ECA, 2004; Otto, 2006):

- A knowledge base of a country's mineral endowments through geological surveys. This is a prerequisite for mineral exploration (see for example Otto, 1995). Many African countries possess vast mineral reserves that have not yet been properly surveyed.<sup>3</sup> Governments also need an understanding of the relevant mineral industries and their importance in the national and global context. The better the knowledge base, the stronger the bargaining position of a government vis-à-vis private enterprises in general and TNCs in particular.
- A legal framework governing the exploration and exploitation of mineral resources that establishes mineral ownership rights. In most countries, the State is the owner of the minerals, in others the rights go with land ownership, and in yet others there are different ownership regimes depending on the mineral (ECA, 2004: 80).
- An administrative framework for the extraction of mineral resources. This involves the issuing of licences, defining under what conditions exploration or extraction may take place and developing mining-right cadastres (i.e. compilations of current exploration and mining activities in the country and their ownership) (Otto, 2006).
- Policies relating to the production of minerals that regulate the activities of industrial and artisanal mining, State-owned and privately owned domestic enterprises and TNCs.
- A system of revenue management. This concerns the sharing and distribution of the rents from mineral extraction. Depending on how they are managed, such rents can have both positive and negative consequences for an economy.
- Policies related to the health and safety of workers, protection of the environment and the rights of local communities.

There is no single formula to apply. Countries need to integrate their specific policies for the extractive industries into an overall development strategy, specifying the role they can play in national economic development. Given that mineral deposits will one day be exhausted, economic benefits from extractive activities need to be sustainable.

To this end, an appropriate portion of the revenues from mineral extraction should be channelled into education, health, infrastructure and other forms of human capital formation and social infrastructure. The distribution of revenues needs to be in line with broader macroeconomic, industrial, trade, social and other policies and their underpinning institutions.

To avoid unequitable solutions, it is also important to engage all relevant stakeholders – governments, civil society, affected communities, labour unions, industry and international organizations – in the process of policy discussion and formulation. The distribution of revenues is a common source of social conflict, which can be mitigated by allocating a share of the revenues to provincial and other lower levels of government, especially in the local areas most directly affected. However, this requires that adequate governance systems and capabilities be developed at the level of local government as well.

The quality of the overall and sectoral policy and institutional framework affects the relative bargaining power of a host country vis-à-vis prospective investors, domestic as well as foreign. The willingness of companies to invest in a project depends on the risk-reward relationship (chapter IV). When risks are perceived to be high, TNCs may only be willing to invest in minerals they expect will generate large rents. A government can influence these risks and at the same time improve its bargaining positions. By providing better information on its mineral endowments it can lower exploration costs; through its regulatory and fiscal policies, it can reduce the financial risk; and by providing greater political stability, it can mitigate the political risk. Moreover, by developing its knowledge, information and negotiating capabilities, it can seek to eliminate the asymmetry that often prevails in these respects between TNCs and host developing-country governments.

## B. Regulating the entry and operations of TNCs in extractive industries

Policies towards foreign involvement in extractive industries have changed over time and still vary considerably between countries and minerals. Approaches range from total prohibition of foreign investment to almost complete reliance on TNCs, with notable differences between the oil and gas industry on the one hand and the metal mining industry on the other, and also between different segments of their respective value chains. For those countries that are open to FDI or other forms of TNC

participation in extractive industries, the challenge is to regulate the entry and operations of TNCs in a way that maximizes development gains. TNC involvement is governed by various national laws, regulations, contracts and more informal institutions. Many countries have also entered into international investment agreements (IIAs) of relevance to TNC operations in extractive industries.

In the oil and gas industry, TNCs operate under arrangements which range from concessions to service contracts with State-owned oil companies. In the metal mining industry, TNCs mainly operate under concessions granted through exploration and mining licences. In both industries, the arrangements reflect an ongoing process through which governments seek to find the appropriate balance between the rights and obligations of the State on the one hand, and TNCs on the other.

## 1. Oil and gas: from “old-style” concessions to partnership agreements

National legislation governing the oil and gas industry defines which forms of TNC participation are permissible. Sometimes, different forms of participation are allowed for different types of TNC activities. Such legislation, which in certain countries has been written into the national constitution, typically authorizes the making of contracts to govern the operations of TNCs on terms consistent with the legislation.

As noted, until the early 1970s a small number of TNCs dominated global oil production, mainly on the basis of concessions. Against a relatively small cost, it gave TNCs the exclusive right to explore, produce and market the resources: a highly uneven financial bargain between a host government and a foreign company (Smith, 1991; Omorogbe, 1997). Moreover, the foreign company was granted rights for periods ranging from 40 to 75 years, and it had secure rights over large tracts of land, sometimes even extending throughout the country (Omorogbe, 1997: 58).<sup>4</sup> Many of these concession agreements ended with decolonization, the creation of OPEC and the widespread nationalizations that took place in the oil industry during the 1970s (box IV.4).

Nowadays, TNC activities in oil and gas extraction are regulated by different types of partnership agreements most often with State-owned oil or gas companies of host developing countries (Likosky, 2006). While there are similarities among these types of agreements, they also differ in important respects. The most relevant contractual arrangements today are modern concessions, joint ventures, production-sharing agreements (PSAs) and

service agreements (box VI.1). As noted (table IV.1), among the main oil-producing developing countries, more than half of all known contracts with TNCs that were in force in June 2007 were PSAs. Joint venture and concessions accounted for another 41%, services agreements for 2% and other contractual forms made up the balance.

There is a qualitative difference between concessions, PSAs, joint ventures, and risk sharing agreements, on the one hand, and pure service contracts on the other. Under the former, the TNC assumes a greater risk and also has a share in the revenue, as set out in contractual clauses and legislation. Under pure service contracts, the company is remunerated by the host government for the specific services it provides.

It is difficult to generalize as to which contractual forms are the most beneficial for a country. Since countries vary in the quality of their resources and in their level of domestic expertise, one contractual form may be more appropriate than another for different projects within the same country. The effect of a given contract is determined by its content, which is based on negotiations between the State (often represented by a national oil or gas company) and the investor (or consortia of investors). For example, royalty and taxation rates will be contractually determined. The same often applies to issues such as local content, training, host government control over key decisions, the State-owned corporation's participation, and, more recently, human rights and environmental considerations.

All this implies the need for considerable negotiating skills on the part of governments to ensure a satisfactory outcome. In the oil and gas industry, it is typically the national oil or gas company in a developing country that is responsible for such negotiations. There are often significant imbalances between the skills of major TNCs and developing-country governments. A recent study of the Niger Delta illustrates the asymmetrical relationship with regard to environmental protection (UNDP, 2006b: 188):

“The companies have several advantages over and above all the government regulating agencies. They have better quality and up-to-date maps, as well as satellite images and other remote sensing techniques, and sophisticated computer hardware and software for environmental data gathering, analysis and display.”

The extent to which TNCs are involved in oil and gas extraction varies considerably by country (chapter IV). According to one estimate, in 2005 TNCs from developed countries had



unrestricted access to only 10% of the world's known oil reserves, mainly in developed countries and to another 7% through joint ventures with State-owned national oil companies (chapter IV). The remaining reserves were basically off limits to TNCs. Downstream activities including refining, petrochemicals, transportation and distribution are generally more open to foreign investments in many countries.<sup>5</sup>

In *West Asia*, most countries ban FDI in the exploration and extraction of oil and gas.<sup>6</sup> While the constitution of the Islamic Republic of Iran prohibits the granting of petroleum rights to foreign companies, it permits foreign investment in the form of buy-back contracts.<sup>7</sup>

In *Latin America and the Caribbean*, institutional reforms in the 1990s opened parts of the industry to private (and foreign) investment; they focused on exploration and production in new

regions and deep waters or involved extraction from marginal or extra-heavy crude oilfields at high cost. The richest and most profitable oil deposits have remained in the hands of State-owned companies, but sometimes developed with the involvement of foreign TNCs.<sup>8</sup> Mexico, however, maintains its monopoly of the State-owned company, PEMEX in oil exploration and extraction (ECLAC, 2002: 143). In natural gas, countries in this region have opened to FDI to a greater extent, often offering incentives to foreign investors. In Argentina, Bolivia, Peru and Trinidad and Tobago, TNCs have been permitted to operate large gas fields alongside State-owned enterprises, while in Colombia and Venezuela they have been required to enter into agreements with State-owned enterprises.

*African* oil producing countries as well as *China* and *Indonesia* have involved TNCs in their oil industry through various PSAs,

#### Box VI.1. Common forms of contractual arrangements with TNCs in the oil and gas industry

Under *modern concessions*, foreign firms are granted the right to explore, produce, and market resources from a specific geographic area. Thereby they assume all the risks in case of failure and reap the rewards in case of a commercial find. The rewards are a function of the level of production, price, taxes and other fees. Foreign firms usually have the right to choose applicable laws and forums for dispute resolution. Concessions are long-term and may be renewed.

Under a *joint-venture* arrangement, the foreign company does business jointly with a State-owned company. Partners share the exploration and production costs in proportion to their equity stakes. Usually the State-owned oil company has a majority interest. As in the cases of concessions and PSAs, the specific legal arrangement determines the extent of foreign control. However, the joint venture provides a corporate, structured means for technology transfer and shared decision-making. It may enable a host country to put a premium on technology transfer and thereby pursue the aim of reducing the reliance on foreign companies. Inevitably, the prospect of such independence runs counter to the interests of TNCs. As a result, the extent of technology transfer built into the joint venture is negotiated, and varies depending upon the bargaining strength of the national government.

In *production-sharing agreements*, foreign firms bear all the exploration costs and risks. If resources are not found, the company is the loser. However, if commercially exploitable resources are discovered, it has the right to recoup sunk costs and an agreed share of the profits. The arrangement may be useful if a host government needs a company to undertake the risk of exploration. For instance, a TNC might find such an arrangement more useful than a modern concession if it is uncertain about its ability to recoup its sunk costs within the strictly definite time period provided for by the modern concession. The first PSA was signed by Indonesia in 1961 with Asamera Oil Corporation (Canada).<sup>a</sup>

*Risk service contracts* resemble PSAs and address situations in which a host government seeks to utilize TNCs to bear the risk of exploration. If commercially exploitable resources are discovered, the TNC receives cash remuneration for its efforts in addition to a possible stake in the subsequent enterprise. If no discovery is made, it incurs all the losses. Under *pure service agreements* foreign firms supply the host country with services and know-how related to exploration and/or development. In return, they receive remuneration in accordance with the terms and conditions of the contract, regardless of whether there is a commercial find or not. Hence, in this case the government bears the risk. To rely on such a service contract and assume the principal responsibility for a project, a host government must have sufficient technological know-how and access to capital.

The distinction between these various types of arrangements may not always be obvious. The parties may use different names for contracts with similar terms and conditions, or conversely, use the same name for contracts with different terms and conditions (Bindemann, 1999). What form is the most appropriate for a given country or extraction project depends on a number of parameters, including the maturity of the oil industry, the fiscal regime, import or export dependency, geological aspects, costs and the regulatory framework.

Source: UNCTAD, based on Smith, 1991; Bindemann, 1999; and Omorogbe, 1997.

<sup>a</sup> See, for example, Fabrikant, 1975; and Machmud, 2000.



accompanied often by joint ventures or other types of capital participation (chapter IV). In the *Russian Federation*, the State-owned enterprises – Rosneft in oil and Gazprom in gas – have occasionally partnered with TNCs when finance or the latest technology have been needed to develop difficult or remote fields.

Recent policy changes in a number of oil-producing countries have tended to further limit the extent to which TNCs can engage in oil and gas exploration and extraction (see section C below). Meanwhile, the noted rise of new oil and gas TNCs from emerging economies (chapter IV) implies greater competition for those oil and gas projects that are still open to TNC participation.

## 2. Codes and mining agreements governing FDI in metal mining

National legislation governing the mining industry defines which organizational forms TNC participation may take in metal mining. In contrast to the situation in the oil and gas industry, concessions are the predominant form of TNC participation in metal mining in developing countries. Mining companies obtain licences to explore for and produce minerals and have the right to exploit the mineral deposits by virtue of such licences. Many mining laws allow TNC operations to be governed by mining agreements on terms consistent with the legislation, especially in the case of large mining projects (Barberis, 1999). In some countries, a mix of national and sub-national laws governs the mining industry.<sup>9</sup>

As in oil and gas, regulatory frameworks have changed over time, and are still evolving. In Africa, for example, after a period when State ownership was dominant, a process of deregulation and privatization started in the 1980s. Increased liberalization, deregulation and privatization were promoted in African economies in general, including by international financial institutions, as a means of correcting macroeconomic imbalances, stimulating economic recovery and establishing a more sustainable growth path. Promotion of FDI was an integral part of this strategy and often involved the offer of tax incentives. Among the main reasons advanced in support of the institutional reforms was the under-performance of the mining industry in many developing countries, the absence of interest in or capabilities for exploration and investment, and rising external debts (UNCTAD, 2005b). A common feature in the 1990s was the enactment of new mining codes, or revisions of the existing ones,<sup>10</sup> specifically designed to provide assurances and better conditions for investors (box VI.2).

As part of mining code reforms, restrictions on foreign ownership of metal mining operations were eased or entirely abolished in most developing countries. Most countries in Latin America and the Caribbean introduced substantial changes in their mining legislation in the 1990s (Albavera, Ortiz and Moussa, 2001).<sup>11</sup> In Peru, State dominance was reversed in 1991-1992 through new legislation which made the promotion of investments into the mining industry, and the privatization of State-owned mining as well as oil companies a matter of national interest.<sup>12</sup> The Argentinean mining code was radically changed for similar reasons. In Brazil, Indonesia, Papua New Guinea and the Philippines, TNCs were allowed a 100% equity ownership in mining ventures (Otto, 2000; Barberis, 1999). Chile also opened up to FDI, but retained State ownership of Codelco.

Common features of current mining laws include increased security of tenure, open access to historical exploration reports, streamlined and transparent exploration application procedures, geographically defined exploration areas, provision for dispute resolution and methods to resolve conflicting land uses (Otto, 2006: 113). A number of countries stipulate conditions related to the employment of domestic or foreign employees in the metal mining industry (Law Business Research, 2005).<sup>13</sup>

Moreover, with a view to providing additional certainty to investors, many developing and transition economies went beyond opening up to foreign investment in extractive industries by locking policy changes into fiscal stability clauses<sup>14</sup> as well as by signing various international investment agreements (IIAs). The most important IIAs in this context were bilateral investment treaties (BITs) on the promotion and protection of foreign investment.<sup>15</sup> In many mineral-rich countries, the number of BITs has increased rapidly during the past decade (table VI.1).<sup>16</sup>

It is important to place these regulatory changes in perspective. The liberalization efforts of the 1980s and 1990s were undertaken against the backdrop of historically low mineral prices, and in many countries with large external debts, which saw a need to attract foreign investment as a means of increasing exports and earning more foreign currency.<sup>17</sup> Countries that had previously nationalized the mining industry had to convince foreign companies that new investments would not meet the same fate. In hindsight, and in view of current high mineral prices, some of the mining codes then adopted and some mining agreements negotiated may have been overgenerous to foreign investors. It has been argued that liberalization

### Box VI.2. Three generations of mining code reforms in Africa in the 1980s and 1990s

The reform of regulatory and legal frameworks in the mining industry in Africa since the 1980s has contributed to a more welcoming institutional environment for FDI. Three generations of mining code revisions in African countries have been identified (Campbell, 2004).

The first generation in the 1980s involved a number of variants of State withdrawal or privatization, which were deemed necessary to attract FDI. In Ghana, for example, an active policy to divest the Government's shares in State-owned mines and attract FDI into the mining sector involved the streamlining of the legal and institutional framework. Policy changes initiated in 1986 included the establishment of the Minerals Commission to act as a one-stop investment centre for mining, the enactment of the first comprehensive mining code – the Minerals and Mining Law – and the promulgation of the Mineral (Royalties) Regulations, as well as the Additional Profit Tax Law. These laws formed the basis for providing generous tax incentives to investors in mining. While the generally applicable corporate tax rate was 55% in the mid-1980s, the mining industry rate was fixed at 45%. Front-end charges, which had previously amounted to 12% of the total value of profits from minerals extracted, were reduced to 3%-12% (depending on profitability).

The second generation of reforms (in the early to mid-1990s) involved an increasing recognition of the need for certain forms of regulation, notably with respect to the environment, with responsibility for this assigned mainly to private actors. In Guinea, for example, among the various aspects of increased liberalization (as illustrated in Article 16 of the country's 1995 Mining Code), protection of the environment and the responsibility for the monitoring and enforcement of environmental laws were assigned to the operating companies. In addition, its new mining policy aimed at restoring competitiveness through a mining industry tax system and it provided a stable tax regime through the duration of the assigned mining rights.

The third generation of institutional change dates from the end of the 1990s. It explicitly recognized the role of States in facilitating as well as regulating FDI and was largely encouraged by the World Bank. Examples of this generation of code revisions can be found in Mali, Madagascar and the United Republic of Tanzania. The 1999 Mining Codes of Mali and Madagascar included special provisions for the protection of the environment. However, neither country was well equipped to enforce the observance of the environmental standards by private operators.<sup>a</sup> Following a five-year sectoral reform project financed by the World Bank, a new mining code was also introduced in the United Republic of Tanzania in 1998. It allowed 100% foreign ownership, introduced guarantees against nationalization and expropriation, and permitted unrestricted repatriation of profits and capital. As in Mali and Guinea, the revised mining code offered a royalty rate of 3% of the value of exports, and a variety of incentives such as tax exemptions and a waiver on import duties.

Many of the mining code reforms took place at a time when metal prices were thought to be in secular decline and countries struggled to attract mining FDI. In view of the often disappointing performance of State-owned mining companies and the need to repay the external debt, the reforms sought to reduce the role of the State as operator of mining activities and to create an environment favourable to FDI. And FDI did increase. In the United Republic of Tanzania, for example, annual FDI inflows surged from virtually zero in 1990 to more than \$500 million in 2000, mainly related to gold mining. In Ghana, annual inflows were about 10 times higher at the end of the 1990s than they had been in 1990.

Source: UNCTAD, based on Campbell, 2004 and 2006.

<sup>a</sup> See "African mining codes questioned", *Mining Journal*, London, 14 February 2003.

of fiscal and regulatory frameworks of extractive industries was introduced without the necessary safeguards for securing long-term development objectives (Campbell, 2004; UNCTAD, 2005b). Another contentious issue arises from the fact that the tax conditions were locked in through stabilization clauses and investors were provided enhanced protection in IIAs at a time when the bargaining position of countries was particularly weak.

In response, several countries have recently made their regulatory frameworks governing TNC participation more stringent. This may be seen partly as a counter-reaction to the liberalization efforts of the 1990s, partly as a reflection of the increased

bargaining power of countries in the current period of high mineral prices. Already a decade ago, some experts were predicting that such a counter-reaction to liberalization would occur. To quote from one expert: "When conditions change, it is reasonable to assume that the developing countries, will again make efforts to assert 'permanent sovereignty' over their natural resources in whatever way possible and that since it is their second time around, they will achieve more success. Any supposed 'incentives' or stabilization measures which have come into existence during this period and which appear to run counter to nationalistic ideals are likely to prove problematic in the long run" (Omorogbe, 1997: 30). Recent legislative changes in a number of countries seem to confirm the validity of that prediction.

**Table VI.1. Number of BITs concluded by developing and transition economies in which oil, gas and other minerals account for a significant share of total exports,<sup>a</sup> 1995 and 2006**

Countries most dependent on fuel exports			Countries most dependent on exports of non-fuel minerals		
Economy	1995	2006	Economy	1995	2006
Algeria	5	36	Guinea	3	18
Nigeria	5	19	Botswana	0	9
Libyan Arab Jamahiriya	2	18	Suriname	1	3
Yemen	5	34	Zambia	2	12
Kuwait	16	46	Jamaica	9	16
Angola	0	5	Niger	3	5
Qatar	0	34	Chile	24	52
Saudi Arabia	2	16	Mozambique	1	21
Brunei Darussalam	0	5	Papua New Guinea	5	5
Azerbaijan	4	27	Congo	5	9
Iran, Islamic Rep. of	8	55	Ghana	8	26
Venezuela	13	26	Cuba	12	60
Turkmenistan	12	19	Peru	23	31
Oman	8	26	Rwanda	3	34
Gabon	4	12	Uzbekistan	16	41
Sudan	4	25	Georgia	12	27
Syrian Arab Republic	6	33	South Africa	8	36
Bahrain	1	19	Bolivia	16	22
Trinidad and Tobago	4	10	Kazakhstan	15	35
Kazakhstan	15	35	Bahrain	1	19

Source: UNCTAD (www.unctad.org/ia) and table III.5.

<sup>a</sup> Countries were ranked according to the share of fuel and non-fuel minerals in their exports during 2000 and 2004. See note "a" to table III.5.

## C. Arrangements for rent-sharing

The diversity of arrangements adopted by different host countries with respect to the sharing of rent between governments and TNCs in extractive industries indicates that there is no one-size-fits-all formula. Finding the right balance is not easy, as witnessed by the many changes that have taken place over time. This section looks at recent trends concerning changes in the ownership and fiscal regimes adopted by host countries aimed at reaping greater benefits from TNC-driven mineral extraction. The implications of unilateral government action are discussed, and the use of progressive taxation is highlighted as a possible way of reducing vulnerability to price volatility.

As government revenue is among the most important benefits from mineral extraction (chapter V), it is not surprising that policymakers devote much attention to finding an institutional framework that ensures the government a satisfactory share in the profits from this activity. Optimizing a fiscal system for the extractive industries is difficult: if taxation is too low, it can result in foregone tax revenue for the host country; if it is too high, it may suffocate the industry and provide little incentive for companies to invest. Every country has followed its own path, depending on various factors. As a result, the share of resource rents captured by host governments varies considerably from country to

country and also between different industries (box VI.3; chapter V).

## 1. Recent policy changes

As a result of higher mineral prices, a number of governments have taken steps to increase their share of the profits generated by extractive activities, including those with TNC participation, amending the fiscal system or contractual relations. For example:

- *Algeria* promulgated regulations imposing a windfall tax on production values at prices exceeding \$30/barrel of oil in December 2006. The tax rate ranges from 5% to 50% depending on the total output.<sup>18</sup>
- In *Bolivia*, the Government passed the new Hydrocarbon Law 3058 in 2006, repealing the law that had privatized the sector a decade earlier. As a result, control over oil resources was transferred to the State agency, Yacimientos Petroliferos Fiscales Bolivianos (YPFB). The new law cancelled contracts and required the negotiation of new ones on terms more favourable to the Government including higher tax and royalty rates.<sup>19</sup> The Minister of Mining has also proposed that the tax rate be raised from the current level of about 5% to at least 30%.<sup>20</sup>
- In *Chile*, the Chamber of Deputies has approved a 4%-5% special tax on gross operating profits of mining companies (box VI.4).
- *China* imposed a special upstream tax levy in 2006 on oil companies at rates between 20% and 40% for oil prices in excess of \$40/barrel of oil. This action prompted ConocoPhillips to invoke the international arbitration clause in its PSA.<sup>21</sup>
- *The Democratic Republic of the Congo* is to review 60 mining contracts that were signed over the past decade and that may result in contract renegotiations with the aim of reaping greater development gains from mining.<sup>22</sup>
- In *Ecuador*, a new hydrocarbons law of 2006 increased the share of revenue accruing to the Government from oil and gas projects, prompting a series of contract renegotiations and disputes (*WIR06*).<sup>23</sup>
- In *Mongolia*, a windfall profit tax was introduced in May 2006 on key commodities. The new tax rate was set at 68% on profits from copper and gold, after deduction of extraction costs, and only if global prices exceeded a specified level.<sup>24</sup> Royalty rates for all metallic minerals were also doubled from 2.5% to 5% in 2006. Moreover, the Minerals Law was amended in July the same year, so as to give the national Government the

### Box VI.3. Different ways of sharing the rent

Revenue for the government from *oil and gas* extraction by TNCs can be obtained in different ways. The fiscal terms may be regulated by legislation and through specific contracts. Fiscal provisions may comprise pre-production as well as post-production payments. The former may include bidding fees, signature bonuses and various rental fees, which allow a host country to earn some revenue even before any discovery has been made.<sup>a</sup> Post-production payments include taxes, royalties, profits from the sale of oil and dividends from State participation in joint ventures (Omorogbe, 2005). The precise composition of the fiscal package varies by country and project. For example, in Nigeria, the royalty tax rate is the highest (20%) for onshore activities, with a gradual reduction depending on the depth of an offshore project (Ibid.). In Peru, the royalty rate for oil varies by contract, between 20% and 25% of the gross revenue, and it is 37.2% of gross revenue on natural gas and liquified natural gas of the Camisea project (Perupetro, 2005).

The fiscal regimes governing *metal mining* activity similarly vary considerably (Otto et al., 2006). The main distinction is between taxes based on the mineral deposit, or on the inputs or actions needed to exploit the deposit (*in rem* taxes), and taxes that are related to the net revenue generated by the resource extraction (*in personam* taxes). The most common among the former taxes are royalties, property tax, withholding tax and various fees, while for the latter, they include income tax, capital gains tax and withholding profit tax.

Each tax has its merits and drawbacks, depending on what policymakers are seeking to achieve. For example, a royalty tax offers stability and predictability in government revenues, it is easy to administer, less prone to corruption and involves little risk of tax evasion. On the other hand, it adds to production cost, and thereby reduces the attractiveness of a given project at the same time as it, by adding to the variable costs may make marginal reserves sub-economic. A tax on income or profits generates revenues only if and when production becomes profitable, and in principle does not distort resource allocation or investment decisions. On the other hand, such taxes are more challenging to administer and monitor. They can also induce companies to report low profits and to make use of transfer pricing (Otto et al., 2006). Countries with relatively underdeveloped institutions and weak administrative capabilities may be more inclined to rely on royalties or various fees. Profit-based systems may be more suitable in countries with more sophisticated tax regimes. For similar reasons, developing countries may also find it convenient to avoid systems that require burdensome negotiations with the foreign investor. This point is particularly relevant in the case of mining, where the negotiations, unlike for the oil and gas industry, are handled by a ministry rather than by a State-owned company.<sup>b</sup>

Source: UNCTAD.

<sup>a</sup> Such pre-production payments can be significant. For example, a new record signature bonus was reached when Sinopec (China), in 2006 announced that it would pay a \$2.2 billion signature bonus to get the right to explore for oil in two Angolan blocks (see [www.globalinsight.com/SDA/SDADetail5873.htm](http://www.globalinsight.com/SDA/SDADetail5873.htm)).

<sup>b</sup> State-owned oil or gas companies may have an advantage over ministries in negotiations with TNCs since they often have a cadre of trained personnel with more effective negotiating skills (Land, 2007).

right to acquire a stake of up to 50% in a strategic asset discovered with State funding, and up to 34% interest in a deposit if the exploration was funded privately.<sup>25</sup>

- *Peru* in 2004 introduced a 1%-3% royalty tax based on mining companies' annual sales. There is a political debate in the country as to whether the tax terms granted by previous governments should be renegotiated.<sup>26</sup>
- In *the Russian Federation*, the Government is in the process of introducing new limitations on foreign participation in the share capital of strategic companies and in the exploration and extraction of strategic deposits (especially large oil and gas fields). The new subsoil law, submitted to parliament in 2005, is expected to enter into force in late 2007 (RIA Novosti, 2007a and b; Liuhto, 2007).<sup>27</sup> Similarly, since 2003, the Government has renegotiated the terms of almost all TNC-related oil and gas contracts (OECD, 2006), resulting in an increase in the

Government's share in the returns from projects, and higher taxes and royalties.<sup>28</sup>

- *South Africa* was revising its mining legislation in June 2007 with a view to increasing its revenues and development benefits from mining. The draft legislation proposes a royalty rate between 1% and 6%, depending on the type of mineral.<sup>29</sup>
- *Venezuela* has decided to entirely re-write the rules on equity participation and taxation to reduce foreign oil company interests and increase the taxes imposed on them. In 2001, the Government passed a new Hydrocarbons Law, which raised royalty rates and required that future investments would be limited to 49% ownership of a joint project, while a 51% controlling share was reserved for the State-owned oil company, PDVSA.<sup>30</sup> In 2006, risk service contracts with 17 foreign companies in Venezuela were transformed into joint ventures with PDVSA. A Presidential Decree in February 2007 expropriated projects in the Orinoco River Belt.<sup>31</sup> In doing so, it



#### Box VI.4. Chile's new mining tax

Fiscal revenues from the copper mining industry have been a source of intense debate in Chile over the past several years. For the period 1985-2002, only one of the large private mining enterprises had paid any significant income taxes (chapter V). Comparative fiscal studies have shown that Chile offered a tax system that was among the most attractive for investments in mining.<sup>a</sup> It did not impose any royalty fees. Furthermore, it allowed accelerated depreciation, the possibility to accumulate indefinitely all losses as fiscal credits, extremely high loan-to-equity ratios while taxing interest payments at a much lower rate than profits.<sup>b</sup> The fact that the contributions by the State-owned Codelco to fiscal revenues in the period 1991-2003 were 3.4 times higher than those of the 10 major foreign mining companies together (while its production volume in tons was lower) evoked a strong debate.

In response, the Government introduced a specific mining tax. It was approved in a year when the price of copper had increased substantially and revenues had grown. The new tax came into effect in February 2006 with a progressive tax rate determined by the taxpayer's gross sales of minerals. Enterprises that were covered by tax stability in the legal framework that applied before December 2004 did not have to pay this tax. However, they were given the option to switch to another tax stability scheme contained in the new legislation.<sup>c</sup>

Source: UNCTAD.

<sup>a</sup> See Albavera, Ortiz and Moussa, 2001 and Otto, Batarseh and Cordes, 2000.

<sup>b</sup> In 2001 the Government introduced a rule that if the debt-to-equity ratio was higher than 3, the excess amount of loans would be subject to the tax rate applied on profits.

<sup>c</sup> A new article in Chile's Foreign Investment Statute (DL 600) states that mining investments of \$50 million or more may, for 15 years from the start of commercial production, claim stability of (a) the specific mining tax, including its rate and tax base and the future imposition of any other tax assessed on income from mining activities, including royalties or similar charges; and (b) the mining licence rate and method of determination.

formed mixed corporate entities charged with exploiting resources, and in which PDVSA is to hold majority equity. The decree also provided that any disputes regarding the Orinoco projects would be heard in Venezuelan courts according to Venezuelan law (Dugan and Profaizer, 2007).

- In *Zambia*, the annual budget announced in February 2007 increased mining royalties and tax rates and curtailed the provision of tax holidays (Land, 2007).<sup>32</sup>

The introduction of new taxes, royalties or price ceilings has also been discussed in Argentina, Chad, Mauritania and other countries.<sup>33</sup> Regulatory changes have similarly been observed in developed countries. Western Australia, for example, has introduced a royalty on gold production, and in the United States there have been calls for Federal royalties in the mining industry (Otto et al., 2006). In 2006, the United Kingdom introduced a windfall tax on North Sea oil profits to reflect the structural shift towards higher oil prices, and the supplementary charge to corporation tax was increased from 10% to 20%.<sup>34</sup>

## 2. Implications of recent policy changes

Changes by governments to laws and contracts governing foreign investment in extractive industries are not a new phenomenon. In the 1970s and 1980s, the shift from traditional concessions

to modern partnership-based agreements often involved the renegotiations of contracts and/or nationalizations.<sup>35</sup> Some of the changes led to legal disputes, and the setting up of special *ad hoc* arbitral tribunals by the parties concerned. However, the host country that had nationalized in a number of cases refused to appear before the tribunal. This had the effect of undermining the legitimacy of the subsequent decision, which would be made on the basis of the submissions of the investor alone (Muchlinski, 2007).<sup>36</sup>

Experts disagree over the advisability and legitimacy of renegotiations, and also whether these advance a country's developmental goals. Some argue that the renegotiation demands are likely to run counter to the interests of developing countries and should therefore only be pursued in exceptional circumstances (Kolo and Wälde, 2004). Others believe that the renegotiations can be justified, as in Bolivia, as an "attempt to represent the interests of the poor people of this country",<sup>37</sup> and that the privatizations which recent renegotiations sought to overturn in that country were themselves not legally valid, as they had not passed through that country's Congress as required by law.

The tension in international law arises essentially from the conflicting needs for contractual stability (sanctity of contract) and contractual evolution (responding to a "fundamental change in circumstances").<sup>38</sup> Contracts that include stabilization clauses freeze the law governing the contract to the one in force at the time of

its formation. The inclusion of such clauses serves to ensure that the wishes of the parties as embodied in the terms of the agreement continue to govern.<sup>39</sup> Moving along the spectrum, the law of the Russian Federation governing PSAs provides investor protection against changes in legislation, but specified certain exceptions under which the Government is able to change conditions without safeguarding the commercial interests of the investor.<sup>40</sup> In other cases parties may voluntarily have incorporated a renegotiation clause into the contract.

Compared with earlier waves of unilateral government actions and nationalizations, an added dimension in recent renegotiations is the wider use of IIAs, of which BITs are the most relevant instruments. While potentially enhancing the chances of attracting FDI, entering into IIAs implies that governments surrender some freedom to adjust their institutional frameworks in response to changed circumstances. The Energy Charter Treaty (ECT) is also of importance, especially for investments in the transition economies of South-East Europe and the CIS, as it aims at strengthening the rule of law by creating common rules to be observed by all participating governments.<sup>41</sup> It is the only example of a specialized international instrument covering the promotion and protection of investors and their investments in the energy industry, from exploration to end-use.

What are the implications for countries and investors of the proliferation of BITs and other IIAs in the context of the recent trend towards increased unilateral government actions in some countries? If a State is determined to put an end to a contractual relationship prevailing under existing terms, an IIA cannot prevent this, but it may grant the foreign investor the right to claim compensation through international arbitration in the case of a dispute. Protection under IIAs therefore mainly becomes relevant in the context of an “exit strategy” for foreign investors (i.e. in situations where it is perceived that there is no possibility to continue their investment activities because of the renegotiation demands). Furthermore, as recent experience has shown, the scope of protection granted by an IIA depends on the way a treaty has been formulated, and its interpretations by arbitration tribunals, which has not always been consistent.

The outcome of unilateral action on the part of governments often depends on the bargaining power of the two parties. For those countries that possess proven and high-value mineral and petroleum deposits, this may be a viable approach to capturing a share of the benefits from extractive activities. However, other countries may find

this course of action more difficult to follow. The response will vary; some companies will accept a negotiated settlement, while others may defend their interests through legal remedies to obtain economic compensation; yet others may pull out of negotiations altogether. In Venezuela, most companies operating under risk service contracts opted to continue under the less favourable conditions imposed by the Government in 2006, whereas at least one – the State-owned ENI (Italy) – chose to take the Government to international arbitration.<sup>42</sup> In addition, the Government reached a deal with Petrobras (Brazil) to renationalize the country’s only two oil refineries acquired by the company in 1999 as part of a broad privatization programme (see chapter II). In Bolivia, all foreign oil TNCs agreed to convert their PSAs into operating contracts, and to turn control over sales to the State-run oil company.

### 3. Is progressive taxation a solution?

The regulatory changes noted above suggest that a number of governments have considered their previous regulations to have been overly generous vis-à-vis foreign investors. It can be argued that under an appropriately designed fiscal regime, it should be possible for a government to adjust its share progressively according to changes in economic circumstances, such as an increase in mineral prices, particularly since there are ways of doing this without distorting investment decisions.<sup>43</sup> In principle, progressive taxation offers the flexibility to induce investment in high-risk ventures yet still assures governments a significant share of high profits, if and when they occur (box VI.5).

However, cross-country studies repeatedly show that many fiscal regimes for the extractive industries are *regressive* rather than *progressive*, implying that the government’s share falls as profitability improves (Land, 2007).<sup>44</sup> One explanation may be related to weaknesses in governments’ capacity to negotiate effectively with TNCs, partly due to the lack of specialized skills needed to understand the fiscal options available; or there may be weaknesses in the tax administrations. In addition, some governments may have limited capacity to implement more sophisticated forms of taxation. This is especially true of taxes the administration of which requires robust reporting and auditing, and where vigilance is needed to safeguard against tax avoidance measures, such as underreporting of revenues and over-statement of costs.<sup>45</sup> The risk profile of the projects may also influence the choice of tax.

Moreover, the inclusion of a progressive tax in a fiscal regime is not a sufficient condition for the entire fiscal regime to be progressive. The interaction with other parts of the fiscal system may offset the progressive elements. The fiscal policy for mining is often weakened (from a government perspective) by the provision of incentives for investors, such as tax

holidays, or offering them the possibility to qualify for pioneer or export industry status under general investment legislation.<sup>46</sup> Where there is a lack of fiscal policy coherence in government, this may lead to “cherry picking” among different taxation schemes by companies (Land, 2007).

### Box VI.5. Progressive taxes and the extractive industries

A progressive tax is structured to adjust the fiscal burden, either directly or indirectly, according to the profits earned on a predetermined basis. There is a wide spectrum of fiscal and other instruments that purport to achieve this, though in practice many have limitations. They include taxes on production, business revenues or profits, State equity participation and production sharing, as employed in the oil and gas industry.

*Progressive profit taxes.* Many profit taxes are applied at escalating rates. In its simplest form, the tax rate escalates with increases in taxable income. A difficulty is how to determine a scale of tax rates that does not merely discriminate between small and large companies. One way of resolving this could be to base the thresholds at which the higher tax rates are applied on profit ratios rather than absolute levels of profits. An early arrangement of this kind was used in Papua New Guinea for the Bougainville copper project.<sup>a</sup> An adaptation of the same principle is the use of a variable rate, as employed in the mining industries of Botswana, Namibia, South Africa and Uganda. In these cases, a profit-to-sales ratio is used to define the tax rate in a formula that also includes start and top tax rates.<sup>b</sup>

The principal characteristic of these examples of profit taxes is that the applicable tax rate depends on the profit performance of companies on an annual tax accounting basis. There are other profit taxes where the applicable tax rate depends on the profitability of an investment achieved on a cumulative basis. For example, in some cases, the applicable tax rate is linked to the rates of return achieved over the project’s life to that point. Several countries have employed this approach, in both the oil and mining industries, usually by establishing a separate tax to supplement an ordinary flat-rate corporate income tax.<sup>c</sup> Its advantage is the ability to target resource rent at the project level. In practice, however, it is difficult to determine the minimum required rate of return of an investor.

*Price-based windfall taxes.* Another way of taxing profits is to impose higher tax rates using a proxy for profitability. A typical example is a price-based windfall tax on profits, as introduced in Algeria and China. These target the windfall profits that are expected to flow from periods of unusually high prices. The advantage of such taxes is that they are relatively simple to administer. A limitation is that product prices alone do not determine the level of profitability.

*Sliding scale royalties.* Royalties can be structured on a progressive basis. Under this approach the rates imposed escalate on the basis of a chosen threshold. Many of the characteristics of this type of royalty are the same as those of progressive profit taxes, except that the fiscal imposition is on revenues and not profits, unless the royalty is structured as a royalty on net profits.<sup>d</sup>

*Carried interest participation.* State equity participation can be structured in a progressive way to operate as if it were a progressive tax. A carried equity option enables a government to fund its share of the costs of a project out of net project earnings without imposing a liability for any shortfall in net earnings. The investor effectively provides an interest-bearing loan to the government, secured against future project profits. This participation operates like an additional profits tax.

*Profit oil sharing under PSAs.* Under this type of arrangement, the balance of production that is not allocated to the recovery of project costs is divided between the investor and the government according to an agreed formula. Some PSAs include an oil price element or a cost indicator (e.g. the depth of water in which an offshore project is located). Although some degree of correlation with profitability can be expected under such arrangements, the correlation is unlikely to be exact. An increasing number of PSAs feature sliding scales that are based on direct measures of profitability. Others employ the rate of return on particular projects.

*Source:* UNCTAD, based on Land, 2007.

<sup>a</sup> Under the renegotiated Bougainville Mining Agreement a higher profits tax rate was applied in any year in which taxable profits exceeded a defined percentage of the capital base of the project (Land, 1995).

<sup>b</sup> The formula used to derive the applicable tax rate in Botswana, for example, is  $70-1500/x$ , where  $x$  (%) = taxable income/gross income subject to a minimum tax rate of 25%.

<sup>c</sup> Prominent examples include the Petroleum Revenue Tax introduced by the Government of the United Kingdom in 1976 to capture a higher share of profits from its North Sea oil and the Additional Profits Tax first adopted in Australia, Canada and Papua New Guinea in the 1970s and subsequently contained in mining legislation in Ghana and in several mining and petroleum agreements (Land, 2007).

<sup>d</sup> Ghana employs a sliding scale mineral royalty with a starting rate of 3% and rising to 12% in line with gold prices.

## D. Policies for broader economic benefits

When designing policies related to the participation of TNCs in extractive industries, policymakers should initially consider how the activities of TNCs could be best made to serve long-term development goals. This may be achieved by promoting backward and forward linkages both within the extractive industries and with related industries, in addition to negotiating an optimal share of revenues. In order to reap broader economic benefits from TNC involvement in extractive industries, it is also essential that any revenue generated from mineral extraction be invested in sustainable activities, including human resource and technology development. The success of host-country initiatives in this respect can be influenced by the actions of home countries and foreign investors.

### 1. Promoting linkages

All forms of linkages – backward, forward and horizontal – may contribute to learning processes and increased local value added in the host economy and ultimately contribute to broader development objectives. However, there are few positive examples of “mineral clusters” that have emerged around TNC-based mineral extraction in developing countries (chapter V). Most policy initiatives launched in African countries to remedy this situation have had only limited success (Pedro, 2004: 13).<sup>47</sup>

In general, extractive industries are characterized by a relatively low incidence of *backward linkages* (chapter V). Nevertheless, host countries can attempt such linkages through various instruments. For example, a number of developed- and developing-country governments have imposed import restrictions or other requirements on TNC affiliates in order to increase local procurement. This practice appears to be more common in the oil and gas industry than in the metal mining industry (Heum et al., 2003; Otto, 2006). In the former case, the levels of local content that have to be achieved are often specified in the contracts regulating the extractive activity. Alternatively, affiliates may be required to state how they plan to increase local content.

For example, for a long time Nigeria has unsuccessfully sought to raise the level of local value added from its largely TNC-operated oil and gas industry (Heum et al., 2003). As of 2005, the local content produced by domestic companies remained basically the same as it had been in the

1960s – at around 5% (Omorogbe, 2005).<sup>48</sup> The country recently embarked on a new programme to increase and deepen the participation of its domestic investors and contractors in the oil and gas industry and to foster linkages between foreign affiliates and various downstream processes. The National Petroleum Investment Management Services have been mandated to raise local content requirements from 40% in 2005 to 45% in 2006, and further to 70% by 2010 (UNCTAD, 2006b: 11).<sup>49</sup> In other countries, contracts may specify that local supply should be preferred if it can compete on quality and price. For example, one agreement provides that the operator and its contractors shall “[g]ive priority to local contractors as long as their prices and performance are comparable with international prices and performance”.<sup>50</sup> Similar clauses can be found in contracts concluded in Latin America and the Caribbean. Brazil, for example, requires oil firms to use 40% of their investments to purchase goods and services supplied by domestic firms.<sup>51</sup> It also imposes a minimum local content requirement of 30% for offshore projects and 70% for onshore projects.<sup>52</sup> Similar requirements are sometimes applied in the *metal mining* industry.<sup>53</sup>

When formulating their policies and objectives related to promoting greater local value added, countries need to take into account commitments made in various international agreements. For example, in some cases, local content requirements may be inconsistent with provisions in certain IIAs. The WTO Agreement on Trade-related Investment Measures (the TRIMs Agreement) prohibits TRIMs that are inconsistent with the obligations of national treatment (Article III GATT 1994) and of general elimination of quantitative restrictions (Article XI GATT 1994).<sup>54</sup> Corresponding provisions exist in the ECT (Articles 5 and 29). To date there have been no cases before the WTO Dispute Settlement Body that specifically concern performance requirements in the extractive industries. While local content requirements related to trade in services fall outside the TRIMs Agreement, some BITs – notably some Canadian and United States BITs – prohibit the use of such requirements.<sup>55</sup>

While some performance requirements have helped catalyse a change in corporate strategies in the automotive and electronic industries (UNCTAD, 2003a), there is little evidence of significant positive impacts in the extractive industries (Nordås, Vatne and Heum, 2003). As noted in one study (Heum et al., 2003: 22): “Local content which can add value to the economy will only develop when local industrial capacity is sufficiently developed and open to interaction with leading international companies. Value addition does not develop by decree”. In other words, to promote efficient and sustainable



backward linkages, there should be greater attention to strengthening domestic productive capabilities and to providing an environment conducive to productive investments by both local and foreign firms.

In extractive industries, as in other industries, a strategy to encourage backward linkages may start out by identifying specific areas offering the greatest potential for such linkages (*WIR01*).<sup>56</sup> As part of efforts to foster stronger supplier capabilities, governments may have to address various bottlenecks in the general business environment (such as skills shortages, high costs of capital and corruption) as well as offering targeted support programmes. In some countries and industries, the involvement of foreign affiliates in such targeted programmes has been useful (for illustrations, see *WIR01*).

TNCs can assist in developing local linkages and improving productive capabilities in a host country. While many inputs (such as technologically sophisticated equipment or knowledge-intensive services) are difficult to obtain or to develop locally, there are likely to be a number of goods and services that could potentially be sourced from within the host economy. Often, foreign affiliates may find it advantageous to use local suppliers when the quality and price of the goods and services they offer meet the stipulated standards. TNCs can play an active role in identifying areas with the greatest potential for local linkages, supporting local suppliers in their training, procedures and quality control; sharing technology and market information with local suppliers; extending financial support (for example, by offering guarantees for bank loans), and assisting government agencies involved in enterprise and supplier development programmes (*WIR01*: 214, see also box VI.6).

A similar approach could be taken to promote *forward linkages* and downstream activities. The aim may be to develop the ability to refine locally and add value to raw materials before they are exported. Processing may involve large-scale, capital-intensive activities, such as smelting and refining, or labour-intensive operations such as handcrafted jewellery and metal fabrication. While successful promotion of downstream processing can bring significant benefits to an economy (chapter V), downstream activities should not be promoted at any cost. A country should have an existing comparative advantage in the activity being fostered, or at least be able to develop such an advantage.<sup>57</sup> In addition, the value of downstream processing may differ by mineral. As highlighted in chapter III, a relatively small share of the total value chain is generated at the mining stage in the case of bauxite, whereas the converse relationship applies in the case of gold.

In the oil and gas industry, some countries have bargained with TNCs to develop downstream activities. The success of CNOOC, CNPC and Sinopec in bidding rounds in Nigeria has partly been attributed to their willingness to invest in downstream activities, such as refining and power plants (chapter V; Accenture, 2006). West Asian countries are increasingly recognizing the need to diversify their extractive-industry-based economies, and are also promoting the development of their oil refining and petrochemicals industries. Saudi Aramco (Saudi Arabia), for example, has entered into partnerships with TNCs in gas development and refinery expansion and the petrochemicals group Saudi Basic Industries Corporation has been involving foreign investors in private petrochemical projects.<sup>58</sup>

The scope for downstream processing may sometimes be limited by the trade policies of other countries. Importing countries have on occasion subsidized the refining of minerals, making it difficult for the producer countries to compete at the refining stage without also subsidizing that activity (see, for example, Jha, Nedumpara and Endow, 2006). Tariff escalation is another potential barrier (UNCTAD, 2003b: tables 9 and 10).<sup>59</sup> Thus, in order to assist developing countries to add more value to their mineral deposits and to encourage industrialization, importing countries may have to consider revising their trade policies.

## 2. Promoting skills and technology development

The lack of skills, productive and technological capabilities and institutional support remains a critical bottleneck in many developing countries, which prevents them from reaping greater benefits from their extractive industries. Addressing this challenge is essential for increasing local value added and for enabling domestic companies and institutions to learn, interact and compete with foreign affiliates. Investments in human resources are similarly important for countries to diversify into non-resource-based activities. Higher commodity prices and government revenues present an opportunity for mineral-rich countries to invest in human resource development. In order to address basic skills shortages it is important to strengthen the educational system so that it delivers the kind of skills most needed for the particular development stage of a country.

With a view to upgrading domestic skills, a number of countries require foreign investors to make a commitment to training of staff and to transferring management skills functions and other

### Box VI.6. Promotion of technology transfer in the oil industry: the case of Norway

In the early stages of the development of Norway's oil and gas industry, there was limited knowledge and expertise in the country about offshore exploration. Concerned about the need for Norwegian participation, the Government placed strong emphasis on developing capabilities in the local enterprise sector as well as in universities. This was partly done by requiring foreign oil companies to set up fully operating affiliates in Norway, and partly by encouraging them to recruit Norwegian nationals.

Various policies were used to facilitate the entry of domestic firms into the supply chains controlled by foreign TNCs. Foreign firms were not excluded, but measures were enacted to enhance the competitiveness of domestic firms. All the policy measures mentioned below were in place until the mid- and late 1980s:

- Norwegian companies had to be included on the list of bidders, and the Government had to be informed about the firms listed on the bidders list before a tender was opened. It could require that specific Norwegian firms be included, but it could not exclude foreign firms from the list. The appropriate Ministry also had to be informed as to which company the job would be awarded before the contract was signed. Only once, however, did a decision change after Ministry intervention.
- As part of the concessionary process, oil companies had to present plans on how the local content would be increased on a competitive basis.
- When negotiating concessions, foreign oil companies were also encouraged to enter into R&D projects with Norwegian universities and research institutions, which resulted in both enlarging and deepening the Norwegian knowledge base on offshore oil and gas. It was enlarged in the sense that the education system was included, and it was deepened by including not only development projects but also scientific research. This is attributed to having boosted the ability of Norwegian oil companies to adjust better to new challenges, such as price fluctuations, field development in deeper water and smaller petroleum fields.
- Foreign oil companies were encouraged to offer technical assistance to local companies so that they could learn the business from experienced organizations and personnel. Joint ventures or cooperative agreements in engineering were also fostered. Associated transfers of technology were probably an important element in improving the country's industrial position.
- Statoil and other Norwegian oil companies started a practice of informing the domestic industry about plans and solutions for future field developments, which helped domestic firms prepare future business opportunities. Foreign oil companies also adopted this approach, thus giving domestic suppliers a competitive edge vis-à-vis their foreign competitors.
- The Government had a deliberate strategy to "Norwegianize" the domestic oil business through contracts and labour relations. This worked in favour of domestic firms relative to foreign firms, without jeopardizing economic efficiency.

Source: UNCTAD, based on Heum, 2002.

responsibilities to local personnel.<sup>60</sup> For example, in competitive biddings for new oil and gas fields in Brazil, one of the criteria for winning a licence was an undertaking to train local staff (Heum et al., 2003); in Equatorial Guinea, the Hydrocarbons Law stipulates that oil TNCs should not only train their workers but also contribute to the training of ministry personnel and to maintaining oil related institutes and training centres;<sup>61</sup> Botswana requires all mining investors to have a localization and training plan that will enable local personnel to take over skilled positions over time.<sup>62</sup> The experience of some developed countries may also be relevant. When Norway first discovered oil in the North Sea, it lacked the technological capabilities to exploit the offshore deposits. A combination of policy measures promoted technology transfer by foreign affiliates to domestic firms (box VI.6).

A basic problem in many developing countries is the lack of adequate educational facilities. Worse still, the increased global demand for mining engineers (that has emerged on the back of the commodity boom) combined with

the closure of some mining schools in developed countries, has increased the risk of a brain drain from African countries.<sup>63</sup> In Africa, high quality mining schools exist mainly in Algeria and South Africa.<sup>64</sup> It has recently been proposed that existing centres of excellence in Africa should be strengthened and new ones created (ECA, 2007a). Some home countries encourage their companies to support skills development when investing abroad. For example, through its Industrial Cooperation Program, the Canadian International Development Agency provides a cash contribution to Canadian companies that start a business and provide training in developing or transition economies.<sup>65</sup>

Another challenge facing developing countries is that the skills required for setting up training and R&D facilities in metal mining are typically located in developed countries. One way to support the development of indigenous skills in this area is to set up local R&D institutes in mining and mineral processing. Important research is being done at many of the traditional schools of mines around Europe, the United States and in some developing

countries (such as Chile), but only a handful of organizations are emerging as global leaders in the relevant fields of science and research, mostly in developed countries such as Australia (CSIRO and Amira), Canada (Camiro), Sweden (Bergforsk and Minmet), and the United Kingdom (Miro), but also in South Africa (Mintek and CSIR Miningtek).<sup>66</sup>

## E. Coping with environmental challenges

More and more countries are introducing environmental legislation, often with specific regulations for extractive industries. At the same time, a growing number of companies are adopting industry standards. Nevertheless, the work is unfinished. Many countries lack the willingness or capability to implement and enforce their environmental laws; and while many environmental challenges associated with extractive industries relate to artisanal and small-scale mining, rather than to large-scale mining activities (chapter V), more junior companies as well as large TNCs need to improve their environmental performance. At the national level, a number of actors, such as host-country governments, TNCs and institutional investors or lenders, home-country governments, civil society and local communities, share the responsibility to mitigate environmental impacts.

*Host-country governments* apply different environmental standards. In many developed countries, it has become increasingly difficult to obtain rights to explore or extract minerals (Otto, 2006: 109). In addition to an increasing number of environmental regulations (often simultaneously issued at the central, regional and local levels), ever larger areas are being protected. Many areas have been zoned in ways that essentially render them off-limits to extractive industry operations.<sup>67</sup> This is leading TNCs to pursue exploration in countries that do not have similar restrictions.

Environmental protection is mostly addressed through two forms of legislation: general legislation that concerns all industries, and specific regulations for the extractive industries (section VI.B). In the past decade or so more than a hundred countries have reviewed and reformed their mining codes. Many of them have introduced new provisions to address environmental issues (Otto, 2006).<sup>68</sup> Mining laws that contain provisions on the environment usually require one or all of the following: an environmental (and social) impact assessment, an environmental management plan, and measures which aim to ensure sustainability after the closure of the operations (MMSD, 2002: 338).

An environmental impact assessment (EIA) is the most significant and commonly used environmental tool in both the mining and oil industries alike.<sup>69</sup> But to be fully effective, it has been proposed that such assessments include a participatory approach and be integrated with other tools, such as a social impact assessment (MMSD, 2002: 248). The results of an environmental impact assessment should also be situated within a broader environmental management strategy, that incorporates environmental responsibilities in everyday management practices. In South Africa for example, according to the Minerals Act, all operating mines must have an environmental management plan that has been approved by the Department of Minerals and Energy (OECD, 2002: 8). Mining laws should also explicitly include mine closure plans, which should be drawn up at the inception of a project and revised as needed.<sup>70</sup> The goal of such a programme is typically to restore the natural environment to its original state as far as possible. Since such restoration might be quite costly it may be advisable to set up a rehabilitation or restoration fund at the inception of the extractive industry project (MMSD, 2002: 243).<sup>71</sup> But even if a law or a contract addresses environmental issues and contains such instruments, host developing-country governments may lack the capacity, technical expertise and/or political will to implement and enforce the provisions.<sup>72</sup>

An important factor related to the implementation of environmental protection is public participation. The process of obtaining a mining license is often government-centred and outcomes are not sufficiently reflecting a representative and participatory process (ECA, 2007b: 217). While recent environmental legislation has attempted to take the concerns of other stakeholders into consideration, local people still often lack influence over whether or not a project should be undertaken (MMSD, 2002: 233). In the context of facilitating and encouraging public awareness and participation, the Aarhus Convention of the Economic Commission for Europe (ECE) may serve as an interesting model.<sup>73</sup> The establishment of tripartite governance structures that include governments, civil society and private companies has also been proposed, for example at the 2007 Big Table (box VI.7).

Many TNCs in the extractive industries have incorporated environmental standards into their corporate policies and strategies. In addition to individual companies, international industry associations – at least in the mining industry – have addressed environmental concerns and developed international standards. The International Council on Mining and Metals (box VI.8), UNCTAD, the

### Box VI.7. The 2007 Big Table

The Big Table is an initiative of the United Nations Economic Commission for Africa (ECA) to promote a constructive dialogue between senior African policymakers and their developed-country counterparts. The Big Table 2007, co-organized by the ECA and the African Development Bank, set out the challenges of effectively managing Africa's natural resources for growth and poverty reduction, and proposed an agenda for future action. Key issues included natural resource governance; ownership, participation and intergenerational equity; bargaining power and the role of emerging global actors; environmental stewardship; and capacity-building, partnerships and regional integration.

Acknowledging that the continent's natural resources are important assets for Africa and the world, it was recognized that they can contribute to growth and development if properly managed. For this to happen, Africa must own its development process, its governance systems and institutional capacity should be strengthened, and the wealth from natural resources must be invested in the creation of knowledge for economic innovation, and in the building of social and physical capital. The meeting agreed on the following (see also ECA, 2007a):

- The NEPAD Heads of State and Government Implementation Committee should consider expanding the scope of the African Peer Review Mechanism to include governance of natural resources.
- A peer-learning group on natural resources management will be established.
- Natural resources should be mainstreamed in the next round of poverty reduction strategy papers.
- Local parliaments and independent committees should be involved in the monitoring of natural resources projects.
- Africa's mining codes need to be reviewed to provide better options for Africa to extract benefits from mineral resource exploitation. A study group will be established to that effect.
- A grant facility should be established to help Africa's mineral producers in contract negotiations.
- The international community should support Africa's efforts to map and create inventories of its mineral resources, not least for African countries to obtain better terms in negotiations with external partners.

Source: United Nations Economic Commission for Africa.

<sup>a</sup> It was attended by 52 participants including Ministers and senior officials from 11 African countries, and by high-level representatives from developed countries, regional and international organizations, research centres, the private sector and NGOs.

United Nations Environment Programme, and the United Kingdom Department for International Development have jointly developed a website to provide access to a library of good practice guidelines, standards, case studies, legislation and other relevant material (annex to this chapter).<sup>74</sup> However, "particularly in fragile states some natural resource companies were not observing the highest corporate standards" (ECA, 2007a: 2), and a number of TNCs still do not abide by high environmental standards (chapter V).<sup>75</sup> The record of compliance by junior mining companies with environmental standards set, for example, by industry associations is generally not very good (ECA, 2007b: 222).

The influence of lenders and home States is also important. A number of international financial institutions now take environmental impacts into account before providing finance to extractive-industry investment projects. In 2001, the World Bank launched an extensive review of its mandate aimed at producing a set of recommendations that would guide the future involvement of the World Bank Group in the oil, gas and mining industries. One of its conclusions was that in countries with weak macro and sectoral governance, the Bank should focus its support on strengthening governance and the management of environmental

and social risks rather than on promoting more investment (Liebenthal, Michelitsch and Tarazona, 2005: 95). The International Finance Corporation (IFC) also emphasizes the importance of public participation in its lending decisions and its existing policies require the submission of a Public Consultation and Disclosure Plan for any project with potentially significant environmental and social impacts.<sup>76</sup>

A major initiative, designed for application in all sectors, was the creation of the Equator Principles, a voluntary set of guidelines for managing environmental and social issues in project finance lending, developed by leading private financial institutions with IFC advice and guidance (*WIR06*: 236).<sup>77</sup> It is too early to assess their impact on the lending behaviour of the large commercial banks that have committed to the principles.<sup>78</sup> Nonetheless, one of the main contributions of the Equator Principles is that they lay the groundwork for further action by providing a set of broad policy guidelines. The effectiveness of the Principles may be undermined by the emergence of other sources of financing that do not abide by the same standards. While additional sources of financing must be welcomed from a developmental perspective, such funding also needs to pay sufficient attention to potential environmental and social implications.



### Box VI.8. The International Council on Mining and Metals

The International Council on Mining and Metals (ICMM) was founded in 2001 by some of the major mining companies. Its declared vision is to create a “viable mining, minerals and metals industry that is widely recognized as essential for modern living and a key contributor to sustainable development.” The Council is made up of 15 companies,<sup>a</sup> and 24 national mining and global commodity associations.<sup>b</sup> The 15 companies account for just over 25% of global mining production. All member companies are required to implement the ICMM Sustainable Development Framework – which consists of a set of 10 principles, public reporting and independent assurance guidelines – and comply with policy commitments made by the ICMM Council.

*Source:* ICMM ([www.icmm.com](http://www.icmm.com)).

<sup>a</sup> Alcoa, Anglo American, AngloGold Ashanti, BHP Billiton, CVRD, Freeport-McMoRan Copper & Gold, Lonmin, Mitsubishi Materials, Newmont, Nippon Mining & Metals, Rio Tinto, Sumitomo Metal Mining, Teck Cominco, Xstrata and Zinifex.

<sup>b</sup> Camara Minera de Mexico, the Chamber of Mines of South Africa, the Cobalt Development Institute, Consejo Minero de Chile, Eurometaux, Euromines, the Federation of Indian Mineral Industries, the Indonesian Mining Association, Instituto Brasileiro de Mineração, the International Aluminium Institute, the International Copper Association, the International Wrought Copper Council, the International Zinc Association, the Japan Mining Industry Association, the Lead Development Association, the International Minerals Council of Australia, the Mining Association of Canada, the Mining Industry Associations of Southern Africa, the Nickel Institute, the Prospectors and Developers Association of Canada, Sociedad Nacional de Minería, Sociedad Nacional de Minería, Petróleo y Energía, the World Coal Institute, and the World Gold Council.

## F. Addressing social and political concerns

More than in other areas, investments in extractive activities may have far-reaching social and political implications for a host country (chapter V). Their impacts can range from the national level (e.g. relating to human rights or corruption) to the local level (e.g. concerning local communities or company employees). The protection of the interests and rights of people that might be affected is first and foremost a government obligation – in both host and home countries. In the case of investments in weakly governed or authoritarian States, it is also important to consider the responsibilities of TNCs. Particular attention should be paid to the protection of human rights, including those of labour and the local community.

### 1. Labour-related concerns

Workers' health and safety are among the major concerns in the extractive industries. In most mineral-rich countries, mining remains the most hazardous occupation in terms of the number of people exposed to risk, despite considerable efforts to reduce the toll of death, injury and disease among mineworkers (chapter V). Most mining-related accidents occur in hazardous artisanal mines. But even if extraction activities by TNCs may be less exposed to hazards, health and safety issues remain important concerns.

The International Labour Organization (ILO) has been dealing with labour and social problems of the mining industry since its early days.<sup>79</sup> For over 50 years, tripartite meetings on mining have addressed a variety of issues ranging from employment, working conditions and training

to occupational safety and health and industrial relations in coal and non-coal mining. As a result over 140 conclusions and resolutions have been agreed, including the Mining Convention. Some of these agreements and resolutions have been implemented at the national level, while the ILO has provided assistance for others, such as training programmes and the development of codes of safety practice. The ILO's objective is to ensure decent and safe work for all mineworkers, and that the industry contributes to sustainable development.

The most common obstacle to the implementation of international norms is the lack of domestic capacity in a country, sometimes combined with a lack of political will. However, host-country governments are responsible for the implementation of internationally accepted conventions. A lack of capacity in the host country is no excuse for non-implementation, as this can also be addressed by the participation of home countries, international organization and/or other competent organizations through technical assistance programmes (see the annex to this chapter).

As for TNCs, it is their responsibility to observe the requirements of local labour laws and practices. They should also adhere to fundamental labour standards as set out in ILO Conventions and reemphasized by the ILO Declaration on Fundamental Principles and Rights at Work (1998).<sup>80</sup> In countries where governments restrict the exercise of fundamental labour rights, such as the freedom of association and collective bargaining, TNCs face a dilemma. Should they observe the ban and prohibit the establishment of worker representation, thereby aiding the government in infringing the human rights of the workers,<sup>81</sup> or should they oppose it and risk government censure that may adversely affect their investment? A corporate code of conduct or

an international framework agreement laying down the basic rights of workers is therefore important.<sup>82</sup> The recently concluded agreements between the International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM) and TNCs are one such example (box VI.9).

## 2. Local community concerns

Given their exposure to extractive-industry projects, it is important for policymakers to address the concerns of local communities when developing the regulatory framework for related activities. This may involve designing appropriate mechanisms for the sharing of revenue, undertaking needs assessments, offering adequate compensation, and ensuring that communities have a say in decisions related to extraction activities. It is also important to link community development programmes of TNCs with the development planning processes of local governments (chapter V). Particular attention needs to be paid to indigenous minorities (box VI.10).

As might be expected, country-specific practices with regard to the distribution of fiscal revenue from extractive activities between central and local governments and local communities in areas where extractive activities are located vary a great deal. For example:

- In Ecuador, an average of 90% of available oil rents during the period 1995-2000 were assigned to the central Government (Liebenthal, Michelitsch and Tarazona, 2005: 86).

- In Peru, the law establishes diverse mechanisms for the distribution of the benefits generated from mining and oil and gas activities to the State treasury and the producing regions. The latter receive 50% of the income taxes paid by mining companies to the State, 10% of the gross value of all oil production and 50% of the income generated from royalties on natural gas production.<sup>83</sup>
- In Equatorial Guinea, all oil revenues accrue to the central Government (Liebenthal, Michelitsch and Tarazona, 2005: 86).
- In Nigeria, the share of mineral proceeds paid by the Federal Government to the producing region fell from around 50% in the 1960s to zero in 1979-1981, after which it increased to about 13% by the end of the 1990s (UNDP, 2006b).
- In Indonesia, after the introduction of a regional autonomy law in 2001, provincial and district governments competed against each other to increase their share of the revenues.<sup>84</sup> The mechanism for revenue distribution remains unclear (Erman and Aminullah, 2007).

In order for local people to benefit from such revenues, it is important that the funds be managed in a way that promotes the community's welfare and development. This is particularly important, given the recent commodity price boom.<sup>85</sup> Without the adequate skills to manage these funds, they risk contributing to the development of a local version of the "resource curse" (chapter III).<sup>86</sup> South Africa's Mineral and Petroleum Resources Development Act

### Box VI.9. ICEM and Global Framework Agreements

Global framework agreements are signed between partners on basic, shared principles, and are not unilateral, voluntary guidelines or codes set by companies. The agreements of the International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM) have been the outcome of a process involving ICEM and its affiliates in the home countries of TNCs. So far, ICEM has concluded four global framework agreements with TNCs in extractive industries: Lukoil (Russian Federation), Statoil (Norway), AngloGold Ashanti (South Africa) and RAG (Germany).

The basic standards include: the right for every employee to be represented by a union of his/her own choice; basic trade union rights (ILO Conventions number 87 and 98); employ no forced or bonded labour (ILO 29, 105); employ no child labour (ILO 138, 182); exercise equality of opportunity and treatment in employment (ILO 100, 111); pay fair wages and benefits according to good industry standards; provide a safe work environment; deploy common "best practice" standards; and commit to sustainable social and environmental development. These standards also extend to contractors.

Additionally the ICEM agreements specify that they cover all activities and operations over which the company has direct control, and that the company will exercise its best efforts to encourage and secure compliance with the standards and principles by its subcontractors, licensees and suppliers. The agreements have been used both to discuss issues fundamental to both parties, and to solve problems. Representatives of ICEM and the respective company meet regularly to review the agreement's application and experiences in implementing the agreed principles. Some of the framework agreements facilitate meetings of union representatives of their worldwide organizations and develop a social dialogue with management at all levels.

Source: UNCTAD, based on information from ICEM ([www.icem.org](http://www.icem.org)).

### Box VI.10. Protecting the rights of indigenous peoples in the context of FDI in extractive industries

A number of international norms and guidelines have been adopted in recent years containing procedural safeguards relating to the exploration and exploitation of natural resources in areas where indigenous people live.<sup>a</sup> These instruments affirm the collective rights of indigenous peoples to ownership and control of their lands and natural resources, and to be consulted prior to the development of projects that may affect them. They also affirm their right to adequate compensation, and to refuse their relocation, other than exceptional cases, and on the basis of prescribed procedures. In addition, a number of States now give legal recognition to indigenous peoples' collective rights over land and natural resources based on traditional use and occupation.<sup>b</sup>

*The role of TNCs.* Experience suggests that grassroots cooperation between extractive-industry TNCs and indigenous peoples can reduce the risks of misunderstandings and conflicts, protect the company's brand image and improve its profitability. In the past, lack of consultation with indigenous communities and denial of their rights resulted in civil protests and mobilizations that compelled some companies to cancel their projects or withdraw from operations (e.g. in Bolivia, Colombia, Guyana and Peru). A growing number of extractive-industry TNCs (e.g. Alcan, Rio Tinto and Placer Dome) are now acknowledging the rights of indigenous peoples, and have developed their own related policies and guidelines. In addition, a few impact assessment plans and benefit-sharing agreements have been negotiated between companies and indigenous peoples.<sup>c</sup>

*The role of financial institutions and development agencies.* The protection and promotion of indigenous peoples' rights have become a concern of financial institutions and development agencies. Various private banks, international institutions (including the World Bank Group), multilateral development banks, as well as some national development agencies have established policies and guidelines on projects affecting indigenous peoples. The World Bank Operational Policy Bank Procedure on Indigenous Peoples (OP/BP 4.10) applies to all projects taking place on lands occupied by them.<sup>d</sup> Signatory banks of the Equator Principles have also committed to adhering to the IFC Performance Standard 7 relating to indigenous peoples.<sup>e</sup>

Despite these initiatives, challenges remain, notably on substantive policies which fall short of meeting international human rights standards. Moreover, in many countries, policy implementation and enforcement mechanisms are either absent or fail to offer sufficient guarantees and independence. It is important to give priority to concrete measures and affirmative action that contribute to closing the existing gap between corporate policies and their practical implementation.

*Source:* UNCTAD, based on information provided by the United Nations Office of the High Commissioner for Human Rights (OHCHR).

<sup>a</sup> These include the ILO Convention (No. 169) concerning Indigenous and Tribal Peoples in Independent Countries, the United Nations Declaration on the Rights of Indigenous Peoples, and the Proposed Inter-American Declaration on the Rights of Indigenous Peoples.

<sup>b</sup> For more information, see the 2002 Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People to the Commission on Human Rights (UN doc E/CN.4/2002/97).

<sup>c</sup> For example, the Raglan Agreement (1995) between Nunavimmiut and Falconbridge (Canada) for a nickel mining project, and the Voisay Bay Agreement signed in 2002 between the Innu Nation and Inco (Canada).

<sup>d</sup> The policy requires the borrower to engage in a process of free, prior, and informed consultation at each stage of the project to ascertain the support of the community affected by the project, and to provide it with all relevant information about the potential adverse impact of the project.

<sup>e</sup> It calls for measures to protect the rights of indigenous peoples. It requires borrowers, for example, to formulate social and environmental assessment plans, ensure indigenous peoples free, prior and informed consultation, provide a grievance mechanism, ensure good faith negotiations with representative bodies of indigenous peoples, and formulate measures with regard to relocation and compensation.

of 2002 seeks to ensure that local communities share in the benefits from minerals extracted from their lands while at the same time helping promoting capacity-building at the community level (box VI.11).

Community concerns are not only related to the amount of money that is awarded to them, but also to the social and environmental effects of the extractive activities. There are growing expectations on TNCs to both protect existing livelihoods and maximize the positive development impact through community-development assistance (Idemudia, 2007). TNC contributions to community-development projects, such as local schools and hospitals, the creation of microcredit schemes for

local people and employment assistance (chapter V), can be valuable to the local economy.<sup>87</sup>

However, such contributions can also raise sensitive policy issues. Where local government is weak and/or poorly financed, there is often a tendency for both the community and the State to rely on the TNCs to assume many of the "governmental" roles around the operation. When the company has on-site resources, capacities and skills, communities are likely to expect regular services from it (Banks, 2007). Such an approach does nothing to build local capacity and it may pose problems for communities once a project is completed. In situations where the presence of the corporation and its resources is many times larger

### Box VI.11. The introduction of community “preferent rights” in South Africa

Section 104 of the South African Mineral and Petroleum Resources Development Act of 2002 (MPRDA) introduced preferent rights as an option for communities who wish to participate in mineral development on their land. When a preferent right is granted to a community, a mining company is obliged to obtain the consent of that community before it can secure any mineral development rights. It is hoped that this new feature will make a difference to the livelihoods of people in rural communities. Preferent rights also provide for ongoing benefit-sharing that is made possible by royalties payable directly to communities.

Requirements for a preferent right are that: (i) only the community that owns the land may apply for such a right; (ii) it may not be granted over other rights already issued under the MPRDA; and (iii) the community has to submit proof that it has access to technical and financial resources. It is anticipated that access to such resources will be in some form of a joint-venture relationship with exploration and mining companies. The preferent right must be used to contribute to community development and social uplift. As part of the application process, the community has to submit a (community) development plan demonstrating that the benefits from the right will accrue directly to them. The duration of a preferent right is five years initially, renewable for further periods of five years at a time, upon proof of compliance with the community development plan.

TNCs and other mining companies that form partnerships in the context of preferent rights are likely to benefit from security and continuity of tenure afforded by the rights granted. Because of the potential benefit for companies, communities have been advised to consider the credentials of different applicant mining companies before making a decision. Consideration may be given to a company’s technical competence for extracting a specific mineral, its financial strength and any history of its relationships with other communities. The decision may also be influenced by the company’s commitments to the social plan, labour plan and other requirements.

Regardless of whether or not a community holds a preferent right, the law requires the involvement of communities in decisions that affect them, and the integration of their development plans with those of local municipalities. Community assistance includes any contribution to skills development, sharing of infrastructure, provision of social (government) services through social plans and provision of business opportunities to communities through procurement.

*Source:* UNCTAD, based on Cawood, 2007.

than a government presence, the key is to facilitate and improve capacity for service delivery rather than to assume the responsibilities of the government (Banks, 2007). Similar observations have been made by TNCs themselves, as illustrated by the following comment by a manager of Chevron (United States) (Armstrong, 2001, cited in Omorogbe, 2002: 585):

“We should be very careful about stepping in government’s shoes by directly providing some kinds of benefits to local communities. If we aren’t cautious, we will not only encourage communities to treat companies as if they are government; we will also destroy government’s incentive to do the job it should be doing for local communities to assume their share of ownership and responsibility for their own welfare and improvement”.

An assessment of community-development projects by oil TNCs in the Niger Delta concluded, among other things, that partnership-based projects are more likely to succeed if there is an enabling environment for such partnerships; that bottom-up corporate partnerships are more efficient means than top-down approaches to promote community development; and that lack of tangible effects from partnership-based corporate community development assistance is sometimes linked to government failure (Idemudia, 2007).

## 3. Human rights

Human rights – civil and political as well as economic and social – are essential for welfare-enhancing development (UNDP, 2000: iii). As noted in chapter V, the involvement of TNCs in extractive industries has sometimes resulted in alleged human rights violations in host countries. The main obligation for protecting human rights rests with States (United Nations, 2007, para. 10); it includes preventing corporations (State-owned and privately owned) from breaching rights, and if they do so, taking steps to holding them to account and provide reparation to the victims.

*Host countries* have a duty to protect their citizens against human rights abuses. This duty extends to protection against unacceptable behaviour by business entities (United Nations, 2007, para. 10). For a host-country government to be able to meet its obligations, an effective institutional framework, providing for participatory decision-making processes, is therefore needed. Certain minimum capabilities of the various stakeholders are required to enable them to influence decisions (ECA, 2004). One way to achieve a better balance between a favourable investment environment and the interests of local populations is to strengthen human rights standards in the regulatory regime of the host country, and to provide for external



monitoring and enforcement of that regime. In addition, human rights standards can be adopted by corporations by mutual contractual agreement.<sup>88</sup>

As a significant proportion of the world's natural resources are located in poor, weakly governed or authoritarian States, the responsibility of extractive-industry TNCs themselves becomes a pertinent issue. The Special Representative of the Secretary-General (SRSG) of the United Nations, appointed to examine the issue of human rights and TNCs and other business enterprises, noted that there had been a gradual extension of corporate liability for international crimes (e.g. war crimes, crimes against peace, crimes against humanity) (United Nations, 2007). This trend derived from two developments: the expansion and clarification of individual responsibility by international ad hoc tribunals and the Statute of the International Criminal Court, and the extension of responsibility for international crimes to corporations under domestic law. Those combined developments suggest that the legal risk for companies (as well as the remedial options for victims) will increase with the expansion in the number of jurisdictions that allow charges to be made for international crimes.<sup>89</sup>

Regarding human rights violations other than international crimes, no comparable legal developments were identified. International human rights instruments do not seem to impose *direct* legal responsibilities on corporations (United Nations, 2007, para. 44). This protection gap for victims is partly filled by mechanisms that do not themselves create legally binding obligations. Examples of such “soft law” arrangements are the standards set by international organizations such as the ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy, the OECD Guidelines for Multinational Enterprises,<sup>90</sup> the United Nations Global Compact (box VI.12), and the Equator Principles.<sup>91</sup>

Various corporate codes address human rights issues, such as the ICMM principles (box VI.8). Pre-investment human rights assessments have been identified as the measure that would yield the most immediate results in the human rights performance of firms (United Nations, 2007, para. 77). A number of policy tools are already available to help TNCs assess the potential human rights impacts of their operations. These include the compliance assessment developed by the Danish Institute for

#### Box VI.12. Extractive industries and the United Nations Global Compact

More than 160 oil and gas and metal mining companies are participating in the United Nations Global Compact. A significant (and growing) number of these companies are headquartered in developing countries, including Oil India (India), Petrobras (Brazil) and Sinopec (China). Participating companies are expected to integrate the Global Compact's 10 principles into their operations and throughout their supply chains.<sup>a</sup> To fulfil the “Communication on Progress” requirement, companies are asked to report their progress in annual reports, sustainability reports and other forms of public communication, which helps to substantiate their participation in the Global Compact. For example, Statoil (Norway) has embedded the Global Compact principles throughout its business, and in its training and operational procedures. It also includes the principles in commercial contracts and uses the initiative as a platform in specific business contexts with other companies, including with Petrobras in Nigeria.<sup>b</sup>

The Global Compact Policy Dialogue on *The Role of the Private Sector in Zones of Conflict* explores how best to promote the beneficial aspects of trade and investment while reducing the negative effects that can lead to or sustain conflict. Such dialogues seek to sensitize companies to the need to anticipate possible security risks posed by their operations and to adopt conflict-sensitive business practices.

The Global Compact has also begun to engage companies in the oil and gas industry in a series of peer-to-peer industry forums for national and international companies. These enable companies to share experiences related to the challenges and opportunities they face in implementing the Global Compact principles. The first workshop, for companies across Latin America, took place in Mexico in July 2006 and focused on human rights practices. In March 2007, the Global Compact and the World Petroleum Council convened a second workshop for the Asia region, which dealt with all 10 Global Compact principles. These meetings are designed to be hands-on with practical case studies of positive and negative experiences faced by the oil and gas sector. Engaging newcomers from developing countries in the process is considered to be very important.

*Source:* UNCTAD, based on information obtained from the United Nations Global Compact.

<sup>a</sup> The ten principles concern the areas of human rights, labour, the environment and anti-corruption and are derived from the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption ([www.globalcompact.org](http://www.globalcompact.org)).

<sup>b</sup> Should a participant fail to submit a communication on progress for two years, it is labeled “inactive” on the Global Compact website ([www.globalcompact.org/CommunicatingProgress/index.html](http://www.globalcompact.org/CommunicatingProgress/index.html)).

Human Rights, and the risk and impact assessments and screening tools produced by International Alert (United Nations, 2007).<sup>92</sup> A new guide to human rights impact assessments is also being developed jointly by the International Business Leaders Forum, the IFC, and the United Nations Global Compact.<sup>93</sup> However, very few firms in the extractive industries actually conduct human rights impact assessments prior to their foreign investments (United Nations, 2006, para. 31): only one firm in the oil sector – BP – is known to have made public the results of such an assessment.<sup>94</sup>

For corporate standards to be effective, all companies must abide by them. Thus, a second challenge is to engage those major TNCs that have yet to abide by international standards, as well as junior companies and new TNCs from emerging economies, in dialogues about the implications of their investments on human rights. The fact that many TNCs from emerging economies are State-owned raises potential issues related to corporate governance and transparency (*WIR06*: 233). As many of these companies have only recently started to expand abroad, they have limited international experience and exposure to such issues. To the extent that legislation and the development of business standards in some key areas are at a nascent stage in their home countries, they will also have had little opportunity to learn before going overseas. The “new players”, whether State-owned or not, should derive long-term operational benefits from complying with basic human rights standards as part of wider policies for responsible investment. Attention to human rights compliance may be needed to defend themselves against accusations of complicity with various abuses. It may also help them obtain access to finance through the public offer of shares, while also lowering the risk of exposure to foreign direct liability litigation (*WIR06*: 235-237).

*Home-country governments* also have a duty to protect against human rights abuses committed abroad by their nationals and TNCs (see, for example, United Nations, 2007, para. 16).<sup>95</sup> However, only a few States surveyed by the Special Representative reported having policies, programmes or tools in place to deal with corporate human rights challenges, and only a small number had introduced human rights considerations into their investment promotion policies, export credit and investment insurance schemes, or bilateral trade and investment treaties (*Ibid.*, para. 17). Indeed, the behaviour of both developed and developing countries in support of firms – in particular oil companies – has repeatedly raised concerns by civil society.<sup>96</sup>

Some States take human rights into account in their policies to support exports and outward FDI. For instance, the United Kingdom Export Credit Guarantees Department takes into account the contribution of an investment to sustainable development and to the promotion of human rights and good governance,<sup>97</sup> and the Swiss export credit insurance scheme considers the human rights issue when assessing projects. Human rights clauses have also systematically been included in trade agreements between the European Union and third countries since 1995.<sup>98</sup>

Various *investment institutions* are starting to exert more pressure on TNCs to behave responsibly when investing in weakly governed States. Most notably, the Equator Principles feature several human rights elements (*WIR06*).<sup>99</sup> The Principles for Responsible Investment, an institutional-investor initiative in collaboration with other stakeholders and the United Nations, also offer guidance, by providing a framework for institutional investors – asset owners and investment managers – to incorporate environmental, social and governance issues into investment decision-making and ownership practices.<sup>100</sup> The work done by United Nations organizations in the area of investment promotion could also incorporate a human rights perspective. Finally, *civil society* can, and frequently does, act as a catalyst for further development of human rights awareness in extractive projects.

#### 4. Enhancing transparency

In many countries there is a serious lack of information about the allocation of the revenue from extractive activities between TNCs and governments, and how governments spend this revenue (chapter V). Opaque revenue streams and associated corruption will reduce the resources available for investment in development. On the other hand, making the appropriate information available can enable a proper assessment of the impact of investments in these activities. Moreover, greater transparency can help reduce wasteful use of resources and corruption, improve macroeconomic management and enhance access to development finance. But it requires serious commitment not only on the part of host countries and TNCs, but also of home countries, civil society and international organizations.

An important first step for a *host country* is to remove legal obstacles to transparency. In many countries that value governmental accountability, information on revenue from extractive industries, like other revenues, is subject to rules regarding disclosure and revenues are included in the State

budget, which is published and audited. In several other countries, however, revenue is still treated as a State secret and foreign investors may be required to sign confidentiality or non-disclosure agreements. Such practices curtail the public's right to know what the government receives in revenue and can breed corruption. Adoption of rules and measures that ensure transparency regarding the accrual and use of revenues is critical for such host countries if they are to ensure maximum development gains from TNC activities in extractive industries.

TNCs can mitigate the problem of corruption by publishing what they pay to governments on a country-by-country basis, using international accounting standards. The information should include all net taxes, fees, royalties and other payments made to governments, at any level, or to local communities, including compensation payments and community development funding in the short term. TNCs that disclose their payments may face problems in the short term if their competitors do not adhere to the same standards. This may be used as an excuse to lower the standards of transparency, and provide an opportunity to continue opaque practices. Consequently, common standards agreed by all companies are needed to develop a more "level playing field" for revenue disclosure.

*Home countries* also need to be vigilant with regard to transparency, and should take action to curb bribery. Some countries have already undertaken investigations into corrupt practices by TNCs in foreign countries. But more needs to be done to curb these practices. Various *civil society organizations* are also contributing to raising awareness of the need for transparency. One of their most important initiatives is the *Publish What You Pay* campaign involving a coalition of over 300 non-governmental organizations (NGOs) worldwide. It calls for the mandatory disclosure of payments made by oil, gas and mining companies to all governments for the extraction of natural resources. The coalition also launched a campaign calling on resource-rich developing-country governments to publish full details of the revenues they earn.<sup>101</sup> A further important step was taken in 2002 with the establishment of the Extractive Industries Transparency Initiative (EITI), which aims to improve transparency and accountability of both firms and authorities through the publication and verification of company payments and government revenues in the oil, gas and mining industries. Although the participation of countries is voluntary, when countries do commit to the initiative, the transparency provisions apply to all companies in

the country – foreign and domestic, large and small, private and State-owned (box VI.13).

## 5. Dealing with extractive-industry TNC investments in conflict situations

In a number of low-income countries, mineral wealth has contributed to political instability and even to armed conflicts (chapters III and V).<sup>102</sup> Such situations pose a particular challenge to government policies as well as to corporate responsibility. Firms (including TNCs) may find themselves implicated in the domestic or international conflicts generated by competition for the control over resources. By operating in such countries, they may end up directly or indirectly providing assistance to some of the parties to conflicts.<sup>103</sup>

*Home countries* and *the international community* can offer technical assistance to assist host countries in developing their institutional and legal capabilities. They can also help clarify under what conditions it would be appropriate for a company to enter, stay or abstain from investing/divesting. By implementing conflict-related human rights considerations into their FDI policies, they can either encourage foreign investors to adhere to certain standards when they invest, or discourage them from investing. In that respect, one of the most pressing issues that the international community has to tackle is the legitimate use of sanctions. A number of suggestions have emerged, in particular from the Stockholm Process, organized by the Government of Sweden, which merits further consideration by the United Nations Security Council and United Nations Member States.<sup>104</sup>

Several multi-stakeholder initiatives have been established with the goal of reducing the risk of conflicts related to resource extraction and to set standards for corporate behaviour in conflict situations. Some of the most prominent ones are the Kimberley Process Certification Scheme (box VI.14) and the Voluntary Principles on Security and Human Rights. The Kimberley Process had its origin in the efforts to combat the use of "conflict diamonds" to fund the civil wars in Sierra Leone and Angola in the late 1990s. The Voluntary Principles provide guidance to companies on how to conduct comprehensive risk assessments with regard to security and human rights issues, and how to engage with public security forces (military and police), and with private security forces. These Principles are being increasingly embedded in company contracts, thereby also becoming part of the macro-legal framework.<sup>105</sup> These initiatives have been

### Box VI.13. The EITI five years on: progress and prospects

The multi-stakeholder Extractive Industries Transparency Initiative (EITI) was first launched by the then British Prime Minister Tony Blair at the World Summit on Sustainable Development at Johannesburg in 2002. It was the outcome of lobbying by NGOs and the civil society campaign, *Publish What You Pay*. The international anti-corruption movement, Transparency International, also played an important role.

Its underlying concept is straightforward; it requires companies to publish what they spend and governments to publish what they receive, thus making taxes, royalties and signature bonuses public. The resulting transparency between companies and governments leads to greater accountability of governments to their citizens. When countries do commit to the initiative, the transparency provisions apply to all companies in the country – foreign and domestic, private and State-owned, large and small.

Since its inception, universal principles and the content of EITI have been agreed upon, and, as of May 2007, 22 developing countries<sup>a</sup> had committed to implementing its principles and 27 oil, gas and mining companies had agreed to support the initiative. A process for quality assurance has also been put in place. Countries have agreed to have their implementation independently validated once every two years. An extensive technical support organization, financed in large part by a World Bank multi-donor trust fund, is available to aid the national implementation of the EITI principles.

Countries that sign up have to make a public declaration of commitment to the EITI, establish a multi-stakeholder working group (including civil society), and develop a work plan for national implementation. Subsequently, an implementing country will go through a preparatory, a disclosure and a dissemination process. A group of independent validators will also visit implementing countries once every two years and review progress made. To date, Azerbaijan, Ghana and Nigeria have made the most progress in implementing the EITI. In March 2007, Nigeria became the first country to adopt a law making revenue disclosure mandatory. Other countries have made commitments and are still in the early stages of implementation. Unless rapid progress is made, some countries are unlikely to be considered as implementing countries when they undergo validation procedures.

There are a number of ways in which the impact of the EITI could be further enhanced:

- More resource-rich host countries should endorse and commit to the process. To set a good example, key developed host countries should endorse and commit to the process.
- In June 2007, the EITI was formally endorsed by the G-8 at its summit in Heiligendamm, Germany. Endorsement by a larger number of individual home countries should also be encouraged, including by China, India, Malaysia and the Russian Federation, which are emerging as important sources of foreign investment in extractive industries.
- More companies should also sign up and commit to the EITI.
- Ways should be found of making institutional investors conform to the EITI criteria.

The coalition of countries, organizations and companies behind the EITI has made progress in devising principles and criteria, integrity measures and an institutional structure to oversee the initiative. These are now being put to the test and it remains to be seen whether the initiative will contribute significantly to greater development benefits from resource extraction.

Source: UNCTAD and the EITI secretariat.

<sup>a</sup> The following countries have endorsed the EITI: Azerbaijan, Bolivia, Cameroon, Chad, Congo, the Democratic Republic of the Congo, Timor-Leste, Equatorial Guinea, Gabon, Ghana, Guinea, Kazakhstan, Kyrgyzstan, Mali, Mauritania, Mongolia, Niger, Nigeria, Peru, Sao Tome and Principe, Sierra Leone and Trinidad and Tobago.

described as “expressions of an emerging practice of voluntary global administrative rulemaking and implementation...in a number of areas where the intergovernmental system has not kept pace” (United Nations, 2007, para. 56). However, while voluntary initiatives are a welcome development, they need also to be backed by legislation. Guidance from governments and the international community is also clearly important.

TNCs, for their part, need to consider if it is appropriate to invest or stay in a country, or if they should abstain from investing in or divest from an existing project. In some cases, FDI into a conflict

zone can ignite or further fuel a conflict. In such cases, it may be desirable for TNCs to forego their investment intentions. Exact criteria for such cases need further analysis.

More TNCs in extractive industries need to participate in existing international initiatives. A review of the top TNCs in mining, oil and gas shows that only some of them are explicitly committed to the EITI, the United Nations Global Compact, the Voluntary Principles of Security and Human Rights and the Global Reporting Initiative (tables VI.2 and VI.3). TNCs from developing and transition economies have a particularly



#### Box VI.14. Conflict diamonds and the Kimberley Process

The Kimberley Process Certification Scheme (KPCS) has been operational since 2003, and now covers virtually all countries with diamond producing, trading and polishing activities.<sup>a</sup> It has been endorsed by several United Nations General Assembly and Security Council resolutions, and compliance with its requirements has been used by the Security Council as a benchmark for the lifting of diamond sanctions imposed on countries such as Liberia and Côte d'Ivoire.

The KPCS requires that Kimberley Process certificates accompany all rough diamonds traded internationally. Such certificates are issued with the authority of participating governments to guarantee that diamonds in a given shipment are not of "conflict origin". Crucially, the scheme has to be implemented through binding legislation in participating countries, and supported by appropriate penalties for any infringements by individuals or companies. The national legislation of all countries that wish to participate in the scheme is examined to determine whether it in fact implements the necessary requirements. The KPCS is backed by a comprehensive statistical reporting and monitoring system.

The KPCS has developed mechanisms for dealing with non-compliance, with exclusion from the list of participants being the ultimate sanction.<sup>b</sup> The starkest example of non-compliance has been that of the Democratic Republic of the Congo, which was expelled from the KPCS in July 2004 after it was found to have acted as a conduit for illicit diamonds from major diamond producers in the region. There have also been compliance issues in Brazil and in some West African countries. The link between participation and compliance has had a positive impact on the implementation of its core requirements. Following a plenary meeting in 2006 and the three-year review of the scheme, the KPCS started a second round of reviews. Large mining companies – especially De Beers – have played an active role, from lobbying governments to participate to themselves participating in peer reviews.<sup>c</sup>

KPCS participants account for some 99.8% of global rough diamond production, and conflict diamonds now make up less than 0.2% of the international trade in these commodities.<sup>d</sup> The Scheme has enabled previously war-torn diamond-producing countries, such as Sierra Leone or the Democratic Republic of the Congo, to increase their volume of legally exported rough diamonds.

But there are still loopholes in the system. In northern Côte d'Ivoire, for example, the small-scale production of conflict diamonds continues. There is also a need to bring the small-scale, artisanal diamond production, which is characteristic of many diamond-producing countries, fully into the legitimate "pipeline". Related social and environmental issues, such as conditions in artisanal diamond mines, which go beyond the KPCS's mandate, are being addressed, for example, by the Diamond Development Initiative<sup>e</sup> and the World Bank's Communities and Small-Scale Mining initiative.

Remaining challenges notwithstanding, the KPCS stands as the first, and for the most part, successful, attempt to deal comprehensively with a resource-curse-related issue by imposing strict certification and regulatory requirements on an entire industry. Some of its technical provisions are applicable only to rough diamonds. Nevertheless, the KPCS could well prove to be a useful template for addressing similar issues in other high-value commodity sectors jeopardized by issues of conflict or weak governance.<sup>f</sup> It is currently chaired by the European Community, with India due to take over as Chair in 2008.

*Source:* UNCTAD, based on information from the KPCS.

<sup>a</sup> The KPCS has some 50 participants, including the European Community as a single participant on behalf of its 27 member States.

<sup>b</sup> When it was launched in 2003, around one third of the countries that had initially signed up to the KPCS were expelled when they were found not to have implemented its provisions. Many of them rejoined after having adopted the necessary legislation.

<sup>c</sup> The peer review teams are composed of about three government representatives, one industry representative and one NGO representative. Industry representatives have come from big mining companies, and NGOs have been represented mainly by Global Witness and Partnership Africa Canada.

<sup>d</sup> The production of two diamond producing countries has been barred from entering the legitimate trade through the KPCS: Côte d'Ivoire, where there is still a conflict diamond situation, and Liberia.

<sup>e</sup> See: [www.pacweb.org](http://www.pacweb.org).

<sup>f</sup> Discussions on commodity certification have been part of the agenda of the Great Lakes Conference, and the issue of certifying exports of valuable minerals has also been taken up by the United Nations Security Council's expert panel on the arms embargo against the Democratic Republic of the Congo. In the forestry sector, a bilateral form of commodity certification has been launched by the EU.

low rate of participation in these initiatives. For example, judging from data published on the respective websites, none of the top oil and gas or metal mining TNCs from the Russian Federation participate in any of the listed initiatives, and the only Chinese oil TNC in table VI.3 is Sinopec (a Global Compact participant). Petrobras (Brazil), on

the other hand, is committed to the EITI, the Global Compact and the Global Reporting Initiative. Other TNCs from developing and transition economies should be encouraged to follow this example. Also, once a company commits to different standards and principles, it is important that it abides by them.

**Table VI.2. Top mining TNCs participating in selected international initiatives, June 2007**

Company <sup>b</sup>	Home country	EITI <sup>a</sup>	Global Compact	Voluntary Principles	Global Reporting Initiative
<i>Developed home economies</i>					
BHP Billiton Group	Australia	√	√	√	√
Barrick Gold	Canada	√	√		
Teck Cominco	Canada		√		
Glencore International	Switzerland				
Xstrata	Switzerland	√	√		
Anglo American	United Kingdom	√	√	√	√
Antofagasta	United Kingdom				
Rio Tinto	United Kingdom	√	√	√	
Newmont Mining	United States	√	√	√	√
Phelps Dodge	United States				
<i>Developing and transition home economies</i>					
Grupo México	Mexico				
Alrosa	Russian Federation				
Norilsk Nickel	Russian Federation				
Anglogold Ashanti	South Africa	√	√		√
Gold Fields	South Africa	√	√		
Harmony Gold Mining	South Africa				
Impala Platinum	South Africa				

Source: UNCTAD, based on information from websites of the EITI, Global Compact, Voluntary Principles and Global Reporting Initiative.

<sup>a</sup> Freeport-McMoRan Cooper & Gold and Gold Fields are not listed on the EITI webpage. As members of the ICMM, however, they also support the EITI, according to information from the ICMM Secretariat.

<sup>b</sup> Falconbridge, Inco and Placer Dome – which are included in table IV.7 – are not shown here as they have been taken over since 2005.

**Table VI.3. Top oil TNCs participating in selected international initiatives, June 2007**

Company	Home country	EITI	Global Compact	Voluntary Principles	Global Reporting Initiative
<i>Developed home economies</i>					
A.P. Moller-Maersk	Denmark				
Total	France	√	√		
ENI	Italy	√	√		
Inpex	Japan				
Nederlandse Aardolie Mij	Netherlands				
Norsk Hydro	Norway	√	√	√	
Statoil	Norway	√	√	√	√
Repsol-YPF	Spain	√			
British Petroleum	United Kingdom	√	√	√	√
Royal Dutch Shell	United Kingdom/ Netherlands	√	√	√	√
Chevron	United States	√		√	
ConocoPhillips	United States	√		√	
ExxonMobil	United States	√		√	
<i>Developing and transition home economies</i>					
Sonatrach	Algeria				
Petrobras	Brazil	√	√		√
CNOOC	China				
CNPC	China				
PetroChina	China				
Sinopec	China			√	
ONGC	India			√	
Petronas	Malaysia				
Gazprom	Russian Federation				
Lukoil	Russian Federation				
Tatneft	Russian Federation				

Source: UNCTAD, based on information from websites of the EITI, Global Compact, Voluntary Principles and Global Reporting Initiative.

## G. Conclusions

The commodity price boom has presented many developing and transition economies with new opportunities to use their mineral resources in a way that promotes sustainable development. For mineral-rich LDCs, it represents an opportunity to make progress towards meeting the Millennium Development Goals by reducing poverty and embarking on a path of broader based sustainable growth. As domestic resources to exploit the mineral endowments are often insufficient in these and other low-income countries, TNCs tend to predominate (chapter IV). This is especially so in the case of large-scale mineral extraction. In order to maximize economic gains from TNC involvement, and to minimize adverse environmental, social and political impacts, concerted action by all relevant stakeholders is necessary, based on a consensus on coherent and sequenced policies. A number of recommendations for host- and home-country governments, the international community, civil society and TNCs emerge from the analysis in this chapter.

*Host-country governments* should assume the main responsibility for ensuring that tangible development benefits are derived from the extraction

of mineral deposits by providing an appropriate regulatory and institutional framework.

- Governments should formulate a clear vision of how and in what ways the country's mineral resources could contribute to sustainable development. An overall development strategy is essential to ensure coherent policy formulation and implementation. A governance framework based on the rule of law is critically important for effective policy-making. It should consider all relevant stakeholders – both current and future generations. Without such a framework, there is a serious risk that extractive activities – with or without TNC involvement – will bring few gains, if any, to the local population.
- Host-country governments also need to strengthen their ability and capacity to develop appropriate policies. This should involve collecting essential information on the country's mineral endowments (e.g. through geological surveys), and acquiring an understanding of global and regional developments concerning the relevant mineral. Well-informed governments are not only better able to design an appropriate institutional and regulatory framework, but also to negotiate with TNCs if and when this is required.

- Policies towards TNCs should be placed in the context of an overall development strategy, and should address such aspects as transfers of capital, knowledge and technology and access to global markets. Governments at both central and subnational levels also need a clear strategy of how to obtain, manage and use the revenue generated from mineral extraction.
- In designing and implementing policies, governments need to bear in mind the risk-revenue relationship. If a country needs inbound FDI, its business environment should be competitive enough to attract the desired TNCs while at the same time ensuring adequate revenues for the government. As witnessed by the many regulatory changes in recent years concerning the ownership and fiscal policies governing TNCs in extractive industries, finding the right balance is not easy.<sup>106</sup> The volatility of mineral prices adds to the complexity of decision-taking. To reduce the need for unilateral actions, countries may seek to develop frameworks that are robust over different phases of the business cycle. For example, in the case of revenue from mineral extraction, more countries might consider introducing some form of progressive taxation.
- There should be considerable emphasis on strengthening the capabilities of the domestic private sector. A strong domestic enterprise sector that can rely on government support to help improve its competitiveness can increase the chances of TNCs creating backward and forward linkages and learning opportunities for local firms.
- Host-country governments furthermore need to consider the environmental and social impacts of mineral exploitation activities and ensure that all stakeholders are given opportunities to influence the decision-making process.

*Home-country governments* can also influence the potential impact of their TNCs' investments abroad. A number of developed countries and more recently, also developing countries actively support their firms' overseas expansion sometimes with a view to securing access to strategically important resources.

- Home-country governments should promote the responsible behaviour of their TNCs' activities abroad. This is equally important if the home State also owns the TNC. More home countries should become involved in existing international initiatives related to the extractive industries, notably the EITI, to promote transparency. In some cases, TNCs might also be held accountable in their home countries for their overseas activities.<sup>107</sup>

- Home-country governments may also assist the recipient economies in different ways by providing financial and technical assistance. Through its Oil for Development Initiative, Norway, for example, offers various forms of short- and long-term assistance to oil-rich developing countries, while South Africa provides assistance to a number of African countries in support of their extractive industries (see annex to this chapter). Home countries can share also their experiences and knowledge, for example by attending the meetings of the World Mines Ministers Forum and the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development.<sup>108</sup>

The *international community* can help promote greater development gains and address the adverse effects of resource extraction.

- International organizations can facilitate learning opportunities from studying and comparing the positive and negative experiences of different mineral-rich countries. This could be done at a regional context or in other forms, as illustrated by the 2007 Big Table (box VI.7). For example, it is worth exploring the scope for conducting regional geological surveys and for helping to establish regional mining schools in Africa.
- Despite ongoing efforts, there is scope for more technical assistance and capacity-building to help improve the management of mineral resources in low-income countries (see annex to chapter VI).
- The international community can be instrumental in the development of standards and guidelines and in promoting the use of existing tools to help ensure a more development-friendly outcome of TNC activities in mineral-rich countries, notably in weakly governed or authoritarian States. In very serious instances, the global community may have to explore the use of sanctions as a tool to protect human rights.

The role of *Civil Society* should also not be neglected. Trade unions can play an active role in promoting greater development gains from extractive activities. Moreover, international as well as local NGOs in the countries concerned can contribute useful views and expertise on economic, environmental and human rights issues. They can play an important role in monitoring the actions of both governments and companies, and draw attention to good and bad practices by any of the players. Indeed, a number of the recent international initiatives may not have emerged, had it not been for the advocacy and active role of civil society.

When engaging in resource extraction, the role of *TNCs*, first and foremost, should be to contribute to efficient production while, as a minimum, respecting the laws of the host

country. When mineral deposits are found in weakly governed or authoritarian States, foreign companies need to decide whether to invest there or not, since they may end up – directly or indirectly, or even unwittingly – supporting or strengthening the existing order. While there are no easy choices in this respect, a number of recent private-sector initiatives can provide guidance. However, as shown above, even among the largest mineral producers, the number of companies that have signed up to relevant international initiatives is still small. While such initiatives can be considered a necessary complement in countries where appropriate legislation and its enforcement are absent, the impact will be limited unless a large number of TNCs adhere to them and subsequently abide by their commitments.

So, to make the vast mineral resources located in some of the world's poorest countries a force for development, a concerted effort by all stakeholders is necessary. In the case of low-income countries, TNCs are likely to remain active players in this process. The policy challenge is to develop the appropriate legal and regulatory frameworks that create the proper incentives for local and foreign firms to produce efficiently while at the same time addressing the environmental impacts and respecting the interests of local communities and society at large. A win-win situation can be achieved if various minerals can be produced in the most efficient and environmentally friendly manner possible, while at the same time deploying the revenues generated for growth, poverty alleviation and sustainable development.

## Notes

- 1 For a discussion on these changes, see McKern, 1993, Part Three.
- 2 See, for example, Acemoglu, Robinson and Verdier, 2004; Acemoglu and Robinson 2006; Renner, 2002; Shafer, 1994.
- 3 See the Summary Report from the Big Table 2007 – an initiative developed by the United Nations Economic Commission for Africa in collaboration with the African Development Bank to promote dialogue between African policy makers and their developed-country counterparts (ECA, 2007a).
- 4 For example, in 1938, Shell D'Arcy Petroleum Development Company (United Kingdom and the Netherlands) was granted a concession over the entire mainland of Nigeria. It was the only concessionaire and was therefore able to explore at its convenience until 1962, by which time it retained 15,000 square miles of the original area (Omorogbe, 2002: 553).
- 5 "Western firms feel a pinch from oil nationalism", *International Herald Tribune*, 8 May 2006.
- 6 For example, oil and gas industries are not covered by Investment Law No. 13 of 2000 in Qatar; Saudi Arabia includes these in a list of industries into which FDI is prohibited, and in Yemen Investment Law No. 22 of 2002 prohibits FDI in the exploration and extraction of oil, gas and other minerals (ESCWA, 2006).
- 7 Under this arrangement, the contractor funds all investments and receives remuneration from the State-owned company, NIOC, in the form of an allocated production share, and then transfers operation of the field to NIOC after a set number of years. See Country Analysis Briefs: Iran. Energy Information Administration. August 2006, at [www.eia.doe.gov](http://www.eia.doe.gov).
- 8 For example, Venezuela concluded 32 risk service agreements with TNCs during the 1990s which were recently transformed into joint ventures with the State-owned company, PDVSA. Brazil has concluded agreements for activities in selected areas, as have Colombia, Ecuador and Trinidad and Tobago. Argentina, Bolivia and Peru have privatized their oil firms and have opened up to FDI (ECLAC, 2002).
- 9 In Argentina, it is regulated at both the federal and provincial levels. In China, it is regulated by national and local laws, regulations and rules. Similarly, in Indonesia, it is regulated at the central, provincial, regional and municipal levels, and mining rights or authorizations may be granted and regulated at all levels of government (with different rules for different types of minerals) pursuant to centrally enacted mining laws and regulations.
- 10 Between 1985 and 1995, 96 countries revised or planned to revise their mining codes (Barberis, 1999: 16).
- 11 Reforms had already been implemented in Chile with a new mining code in 1983, offering increased investor protection and allowing for a more effective use of foreign investment incentives.
- 12 See Legislative Decree 708 and Supreme Decree 014-92 of the Ministry of Energy and Mines.
- 13 For example, in Brazil, at least two thirds of the mining employees must be Brazilian nationals and two thirds of the payroll must serve to pay those employees. In Chile, no less than 85% of the mining workers of employers with 25 or more employees must be Chilean. Mexico's Federal Labour Law provides that 90% of all hourly and salaried workers and employees must be of Mexican nationality. Companies operating in Peru are allowed to hire only up to 20% of foreign employees, provided that their salaries do not exceed 30% of the total payroll. In India, mining concession holders are restricted from employing persons other than Indian nationals in reconnaissance, prospecting and mining operations (Law Business Research, 2005).
- 14 In the United Republic of Tanzania, for example, in the 1990s large-scale mining companies were guaranteed stability for their long-term mining projects with respect to the range and applicable rates of royalties, taxes, duties, fees and other fiscal taxes and the manner in which liability thereof was calculated. Similar steps were taken in Chile and Peru.
- 15 This was also a major motive behind the main energy-related IIA – the Energy Charter Treaty (1994) – which seeks to increase the stability of the legal environment for energy investment in the transition economies of Central and Eastern Europe and the former Soviet Union (Wälde, 1996).
- 16 Most countries today offer national treatment to domestic and foreign investors with regard to mining rights, with some exceptions, such as the following. For example, in Ghana, small-scale gold mining is reserved solely for Ghanaians. In China, foreign parties are prohibited from exploration or securing mining rights to certain minerals, and are required to have a Chinese domestic partner in order to acquire exploration or mining rights to certain other minerals. In India, only Indian nationals or companies that are registered in India under the Companies Act (1956) are eligible to secure mineral concessions. However, 100% foreign ownership is now permitted for mining of all non-fuel and non-atomic minerals (PricewaterhouseCoopers, 2006). Indonesia's Mining Law grants mining rights or authorizations only to Indonesian



- individuals, companies and other legal entities. The deeds of establishment and articles of association of Indonesian-owned and controlled mining companies normally have prohibitions against foreign ownership (Law Business Research, 2005).
- 17 In Chile, for example, the economic crisis in 1982 added an urgent need to raise foreign currency, and the Constitutional Mining Law of 1982 and the Mining Code of 1983 sought to provide greatly improved rights and protection to foreign investors. However, it took time for Chile to attract FDI, as many foreign companies were reluctant to invest during the military regime, which ended in 1989.
- 18 See “Algeria agrees oil windfall tax”, *BBC News*, 15 October 2006, at <http://news.bbc.co.uk/go/pr/ft/-/2/hi/business/6053120.stm>.
- 19 “Bolivia: A lot of gas for partial takeover?”, *The International Review*, 9(1): 6–9, 2006; Patricia I. Vasquez, “Bolivia: full steam ahead”, *Energy Compass*, 2 February 2007.
- 20 “Bolivian official calls for 600% mining tax increase”, *Resource Investor*, 8 January 2007, <http://news.bbc.co.uk/go/pr/ft/-/2/hi/business/6053120.stm>.
- 21 See [www.marketwatch.com](http://www.marketwatch.com), 5 February 2007.
- 22 See “DR Congo reviews 60 mining deals”, *BBC News*, 11 June 2007, at <http://news.bbc.co.uk/go/pr/ft/-/2/hi/africa/6739999.stm>.
- 23 The Government entered into a dispute with Occidental (United States), which in turn brought an action against the Government in connection with demands for the payment of a value added tax. The company claimed that Ecuador had expropriated its property, a claim that the arbitration tribunal dismissed (see *Occidental Exploration and Production Company v. The Republic of Ecuador* (Case No. UN3467) (7/1/2004); *Republic of Ecuador v. Occidental Exploration and Petroleum Company* [2005] EWHC 774 (Comm)). Similarly, in a separate claim brought to an arbitration tribunal by EnCana Corp. (Canada) also over tax payments, the tribunal decided that an expropriation had not occurred (See *EnCana Corporation v. Republic of Ecuador* LCIA Case No. 3481 (2/3/06)).
- 24 The taxes are effective when copper exceeds \$2,600 per ton on the London Metal Exchange and when the international gold price exceeds \$500 per ounce. A package of tax reforms was approved by parliament in July 2006 which reduced the overall corporate income tax from 30% to 25% and the value-added tax from 15% to 10% (EIU, 2006b).
- 25 See “Mongolia: Legal revisions pose investment risk”, *Oxford Analytica*, 12 July 2006 ([www.oxan.com](http://www.oxan.com)).
- 26 The mining royalty for exploiting mineral resources is to be calculated by applying a rate of 1% rate of the annual sales of concentrates of less than \$60 million, 2% for sales of \$60-120 million, and 3% for sales exceeding that amount.
- 27 According to the draft, foreign investors and Russian companies owned by them will not be admitted to bid in auctions for strategic deposits, nor are foreign-incorporated entities allowed to acquire more than a 50% stake in the strategic deposits or enterprises by any other method.
- 28 A recent example was the sale of Royal Dutch Shell’s majority stake in the Sakhalin-2 project to State-owned Gazprom in early 2007, so as to avoid the revocation of its licence as a result of negative environmental impacts (RIA Novosti, 2007c and d).
- 29 Draft Mineral and Petroleum Resources Royalty Bill presented 11 October 2006 by the National Treasury of the Government of South Africa, p. 23.
- 30 See Hydrocarbons Law of 2001, Article 22.
- 31 In February 2007, a draft bill was announced that would increase the State’s ownership of four Orinoco heavy oil projects from the present level of 40% to 60% (Upstream.com, 26 February 2007).
- 32 The budget contained an increase in the rate of ad valorem mineral royalty from 0.6% to 3%, a rise in the applicable rate of income tax from 25% to 30%, the application of 15% dividend withholding tax on previously exempt mining profit distributions and the curtailment of income tax holidays (PricewaterhouseCooper, 2007).
- 33 For example, Chad plans to establish a State-owned oil company and to renegotiate certain contracts and the Government of Equatorial Guinea has stated its intentions to renegotiate contracts (see “Global oil industry faces broad spectrum of political risk”, *AFX International Focus*, 19 September 2006 and “Africa: resources nationalism African-style”, *Energy Compass*, 12 August 2006).
- 34 See, for example, [www.ukbudget.com/prebudget2005/northseaoiltax/pbr2005\\_northseaoiltaxation.cfm](http://www.ukbudget.com/prebudget2005/northseaoiltax/pbr2005_northseaoiltaxation.cfm).
- 35 In addition to the OPEC renegotiations, others took place in Papua New Guinea (1967), Chile (1967-1971), Jamaica (1974), the Dominican Republic (1987, 1988), Peru (1985) and Colombia (1996) (Kolo and Wälde, 2004; Muchlinski, 1995).
- 36 This was the case in the major oil arbitrations involving Libyan Arab Jamahiriya in the early 1980s (Greenwood, 1982; and von Mehren and Kourides, 1981).
- 37 Joseph E. Stiglitz ‘Who owns Bolivia?’ *Daily Times*, 22 June 2006.
- 38 See, for example, Weiler, 2005; and Muchlinski, 2007.
- 39 An Egyptian contract is an example of a contract that disallows renegotiation: “(b) The rights and obligations of EGPC and ESSO under, and for the effective term of, this Agreement (as well as matters relating to the Joint Company subject to Article IV hereinabove) shall be governed by and in according to the provisions of this Agreement and can only be altered or amended by mutual agreement of the parties.” Egyptian General Petroleum Corporation – Esso: Concession Agreement for Petroleum Exploration and Production (12/14/74), Article XVI *Rules and Regulations* (b), 14 *International Legal Materials* 915, 931 (1975).
- 40 See: Federal Law on Production Sharing Agreements, Article 17(2), 35 *International Legal Materials* 1258, 1270 (1996).
- 41 Its membership includes 52 participants from Asia and Europe plus 19 observer countries from other regions. It offers protection to investment as part of the broader aim to promote open and competitive energy markets and security of energy supply, while respecting the principles of sustainable development and sovereignty over natural resources. It should be noted that Australia, Belarus, Iceland, Norway and the Russian Federation have not ratified the ECT. Belarus and the Russian Federation have, however, declared that they will apply it on a provisional basis.
- 42 See, for example, “ConocoPhillips draws attention in defying Venezuela over oil fields”, *Dow Jones Newswires*, 27 April 2007, at [www.rigzone.com/news/article.asp?a\\_id=44479](http://www.rigzone.com/news/article.asp?a_id=44479).
- 43 In theory, the optimal form of progressive taxation is one that taxes only the portion of investment proceeds that exceeds the minimum rate of return required by the investor to undertake an investment. Such taxes should not, in principle, distort investment decisions insofar as they do not alter the pre-tax merits of an investment.
- 44 Such studies are based on cash flow modelling of the entire array of fiscal impositions on an investment in order to derive a measure of how the net proceeds of an investment over its lifetime are apportioned between the government and the investor (see, for example, Otto et al., 2006; Johnston, 1994; Kemp, 1996).
- 45 A risk with progressive profit taxes is that taxpayers may seek to avoid the higher rates of tax by “gold-plating”, in which costs are incurred that would not otherwise have been expended.
- 46 Generally, the fiscal regime for the oil industry is usually more clearly defined.
- 47 Reasons for their failure included poor project management, lack of embeddedness in the local economy, tariff escalation and other trade barriers, weak local knowledge, lack of supporting infrastructure and lack of competition (Pedro, 2004: 13-14).
- 48 Local content levels are higher for onshore fields than for offshore fields (Heum et al., 2003: 18).
- 49 Some guidelines are very specific. For example, according to the Nigerian Content Development Policy: “From January 2006, all topsides of fixed (offshore and onshore) platforms weighing up to 5,000 tons, are to be fabricated in Nigeria” ... “fabrication of all piles, decks, anchors, buoys, jackets, bridges, flare booms and storage tanks are to be done in Nigeria” ... “all carbon steel pressure vessels of not more than 75mm shell thickness shall be fabricated in Nigeria” (Nigerian Content Development Short Term Directives, Rev 1 as of December 2005).

- 50 Egyptian General Petroleum Corporation – Esso: Concession Agreement for Petroleum Exploration and Production (12/14/74), Article XXIII (a)(1) and (2), 14 *International Legal Materials* 915, 934 (1975).
- 51 See [www.lcrpt.com/showstory.asp?id=6057](http://www.lcrpt.com/showstory.asp?id=6057).
- 52 Atlantic Canada ([www.neiti.org/Local%20Content%205-9-05%5B1%5D.pdf](http://www.neiti.org/Local%20Content%205-9-05%5B1%5D.pdf)).
- 53 For example, under the Mining Sector Charter of South Africa, stakeholders undertake to give historically disadvantaged South Africans preferred supplier status, where possible, in the procurement of goods, services and consumables (Mintek, 2007).
- 54 TRIMs Agreement Article 2. This is likely to apply also to State contracts, as these agreements are legally binding instruments enforceable under domestic law or administrative rulings, and may contain advantages to investors that are made conditional upon the acceptance of those requirements. An investment contract that includes performance requirements prohibited under the TRIMs Agreement would be invalid, at least as far as the TRIMs part is concerned. This is because investors, like any private party, can only renounce their own rights.
- 55 For example, the United States and Canadian model BITs cover performance requirements related to both goods and services. See United States Model BIT 2004 Art. 8, and Canada Model BIT 2004, Art. 7 in UNCTAD, 2007a: 68-69. However, they permit the imposition of certain requirements as a condition of the receipt of an advantage.
- 56 For example, an analysis of the scope for enhanced local content development in the upstream oil and gas industry of Nigeria identified the following, among other areas: fabrication and construction; well construction and completion; modification, maintenance and operations; transportation; control systems; design and engineering; and consultancy work (Heum et al., 2003). This study considered local content development by both domestic and foreign companies.
- 57 For example, there may be a need to consider skills, critical mass and the overall business environment, in addition to the availability of reliable power supplies at competitive costs.
- 58 The Saudi Petrochemical Company, a joint venture between SABIC and Royal Dutch Shell, recently completed a \$1 billion expansion programme.
- 59 For example, while exports of crude oil or unprocessed metal products benefit from zero tariffs in developed countries, average tariffs on processed exports vary between 0.87% and 2.88% for metals, and between 0.39% and 3.17% for oil. The escalation is even more pronounced in some developing countries. In South Asia, for example, the average tariffs on unprocessed and processed metal products were 18.7% and 33.1%, respectively (UNCTAD, 2003b).
- 60 What is stipulated in the legislation may not always reflected in actual developments, however, partly due to weak local capacity of governments to enforce laws and regulations.
- 61 Article 92, Hydrocarbons Law No. 8/2006, of 3 November of the Republic of Equatorial Guinea.
- 62 Mines and Minerals Act, 1999 (Cap 66:01).
- 63 See, for example, South African Migration Project at [www.queensu.ca/samp/migrationnews/article.php?Mig\\_News\\_ID=3119&Mig\\_News\\_Issue=17&Mig\\_News\\_Cat=8](http://www.queensu.ca/samp/migrationnews/article.php?Mig_News_ID=3119&Mig_News_Issue=17&Mig_News_Cat=8).
- 64 Examples include the Ecole Nationale Polytechnique in Algeria and the School of Mining Engineering at the Witwatersrand University in Johannesburg, South Africa.
- 65 Communication by the Canadian International Development Agency in July 2007.
- 66 Information provided by the Raw Materials Group.
- 67 In the United States, for example, as much as 70% of the public land is off-limits to mining and oil exploration in Canada about 17% of the land is off-limits to mining, and in Australia it is about 10% (Otto, 2006: 110).
- 68 However, this does not mean that all new mining codes have led to an improvement in environmental standards. Some States have even downgraded their environmental provisions. In Zambia, for example, the Government passed the Mines and Minerals Act in 1995, but according to the OECD (2002: 10), it “fails to address requirements such as environmental management adequately, as it is less stringent than the 1990 Environmental Act” (see also Campbell, 2006).
- 69 An environmental impact assessment requires examining questions such as whether the impact of a project is within the self-correcting capacity of the ecosystem, whether impact is short- or long-term, whether it is reversible or not, and whether the cost is worth the benefit.
- 70 Such plans regulate the termination of a project and should be designed to ensure, among other things, that future public health and safety are not compromised; environmental resources are not subject to physical and chemical deterioration, and that the site after the end of extraction can be restored. Early steps should be taken to commence a rehabilitation programme once the mining or oil drilling stops.
- 71 It is important to ensure that sufficient funding is available to restore a mining area, even if mining ceases unexpectedly and in an unplanned manner. To this end, various financial mechanisms, including reclamation bonds and insurance contracts, have been devised. However, a lack of capacity in the financial sector of developing countries has often slowed down the introduction of these mechanisms, however (see, for example, [www.goodpracticemining.org](http://www.goodpracticemining.org)).
- 72 In Kenya, for example, the main problems of environmental protection in the extractive industry have been the “conflict or lack of coordination between the various authorities’ regulation activities, lack of enforcement of existing rules and regulations due to the lack of budgetary allocation, bureaucratic inertia, lack of political will and corruption” (OECD, 2002: 18).
- 73 The Aarhus Convention links environmental and human rights. It establishes that sustainable development can be achieved only through the involvement of all stakeholders. It grants certain rights to the public and imposes on Parties and public authorities obligations regarding access to information and public participation and access to justice (see [www.unecce.org/env/pp/](http://www.unecce.org/env/pp/)).
- 74 See [www.goodpracticemining.com](http://www.goodpracticemining.com).
- 75 Some observers have described oil TNCs’ environmental credentials as greatly exaggerated and their actions as “greenwash” (Utting and Ives, 2006: 15).
- 76 The IFC has also published a manual entitled *Doing Better Business Through Effective Public Consultation and Disclosure*. It contains, inter alia, guidelines for identifying consultation possibilities at different stages of a project, a checklist of objectives and actions for improving consultation and another checklist on techniques for public consultation and information disclosure. The checklists provide a range of tools that can be selected for application to specific situations (ECA, 2004: 14).
- 77 See [www.equator-principles.com/](http://www.equator-principles.com/). Current participants are: ABN Amro, Banco Bradesco, Banco do Brasil, Banco Espírito Santo Group, Banco Itaú, Banco Itaú BBA, Bank of America, Bank of Tokyo Mitsubishi, Barclays, BBVA, BMO Financial Group, Caja Navarra, Calyon, CIBC, Citigroup, Credit Suisse Grp, Dexia, Dresdner Bank, Eksport Kredit Fonden, FMO, HSBC, HVB Group, ING, JPMorgan Chase, KBC, Manulife Financial Corporation, Mediocredito Centrale, Millennium bcp, Mizuho Corporate Bank, Nedbank, Rabobank, Royal Bank of Canada, Royal Bank of Scotland, Scotiabank, Standard Chartered, Sumitomo Mitsui, Unibanco, Wells Fargo & Company, WestLB and Westpac.
- 78 In fact, some projects that were financed by banks subscribing to the Equator Principles, such as the Camisea natural gas pipeline project in Peru, have been criticized (see, for example, Amazon Watch at [www.amazonwatch.org/amazon/PE/camisea/](http://www.amazonwatch.org/amazon/PE/camisea/), for a detailed account of allegations related to negative impacts on biodiversity and on the local indigenous people). The greatest concern of the locals was found to be the reduction in the fish catch caused by spills. For related information, see [www.oxfamamerica.org/newsandpublications/news\\_updates/archive2006/news\\_update.2006-07-25.6814983627](http://www.oxfamamerica.org/newsandpublications/news_updates/archive2006/news_update.2006-07-25.6814983627).
- 79 These efforts range from the adoption of the Hours of Work (Coal Mines) Convention (No. 31) in 1931 to the Safety and Health in Mines Convention (No. 176), which was adopted in 1995 (see [www.ilo.org/ilolex/cgi-lex/convde.pl?C176](http://www.ilo.org/ilolex/cgi-lex/convde.pl?C176)).
- 80 The ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy calls on TNCs to respect, promote and uphold the principles concerning fundamental rights, irrespective of whether a country has

- ratified and implemented the ILO Declaration on Fundamental Principles and Rights at Work.
- 81 The right to freedom of association is recognized as a fundamental human right (see: Article 22(1) of the International Covenant on Civil and Political Rights 1966).
- 82 International framework agreements might contain specific obligations.
- 83 UNCTAD, 2007k.
- 84 Prior to this arrangement, the monetary gains from TNCs' extractive operations directly accrued to the central Government.
- 85 In Peru, for example, the revenues allocated to mining regions increased rapidly, from less than \$50 million in 2002 to more than \$500 million in 2006 (Vigila Perú, 2004 and 2006).
- 86 One study noted that "present arrangement[s] give little confidence that these funds can be spent efficiently and with a long-term view, or that examples of a local 'resource curse' can be prevented" (Dietsche et al., 2007b: 81).
- 87 At the same time, they cannot compensate for failures to address duties to remedy possible social or environmental damage (Idemudia, 2007).
- 88 This was done, for example, by the addition of a Human Rights Undertaking in the Baku-Tbilisi-Ceyhan investment agreement between the three host countries involved (Azerbaijan, Georgia and Turkey) and the consortium of oil and gas companies charged with the construction and operation of the pipeline (Leader, 2006).
- 89 For example United States courts have accepted that, in principle, a corporation can aid and abet a government in committing human rights violations and that an action may be brought against it under the Alien Tort Claims Act (Joseph, 2004; Muchlinski, 2007; Clapham, 2006). Adding to the risk is the uncertainty for firms as to where action against them will be filed or what precise standards will be applied since national standards on those issues vary considerably.
- 90 The OECD Guidelines recommend that firms should "respect the human rights of those affected by their activities consistent with the host government's obligations and commitments" (OECD, 2000, General Policies II.2).
- 91 See [www.equator-principles.com](http://www.equator-principles.com).
- 92 See <https://hrca.humanrightsbusiness.org> and International Alert, [http://www.international-alert.org/our\\_work/themes/extractive\\_industries.php](http://www.international-alert.org/our_work/themes/extractive_industries.php).
- 93 See [www.ifc.org/ifcext/enviro.nsf/Content/OurStories\\_SocialResponsibility\\_HumanRights](http://www.ifc.org/ifcext/enviro.nsf/Content/OurStories_SocialResponsibility_HumanRights).
- 94 See [www.humanrightsimpact.org/hria-case-studies/item/case-study/32/](http://www.humanrightsimpact.org/hria-case-studies/item/case-study/32/).
- 95 The United Nations Committee on Economic, Social and Cultural Rights has suggested that States should take steps to "prevent their own citizens and companies" from violating rights in other countries (CESCR, general comment No. 15, para. 33 as cited in United Nations, 2007: 6).
- 96 Regarding civil-society concerns related to Chinese investments in Sudan, see, for example, Amnesty International, 2004 and ECOS, 2006. Regarding concerns expressed over United States diplomacy related to oil-rich African countries, see, for example, Catholic Relief Services, 2003.
- 97 See Department of Trade and Industry, Review of ECGD's Mission and Status, Cm 4790 (London, July 2000); and ECGD, ECGD's Business Principles (December 2000), available at: [www.ecgd.gov.uk](http://www.ecgd.gov.uk).
- 98 Promotion of Human Rights and Democratisation in the European Union's External Relations, at: [http://ec.europa.eu/comm/external\\_relations/human\\_rights/intro/index.htm#6](http://ec.europa.eu/comm/external_relations/human_rights/intro/index.htm#6).
- 99 Fundamental labour rights, the health and safety of surrounding communities, avoidance of involuntary resettlement, the rights of indigenous peoples, and the protection of cultural heritage.
- 100 The Principles for Responsible Investment aim to help incorporate environmental, social and governance concerns into investment decision-making and ownership practices of institutional investors, and thereby improve long-term returns to beneficiaries. They were developed by a group of investment professionals representing 20 large institutional investors from 12 countries at the invitation of the United Nations Secretary-General, Kofi Annan in 2005. They were supported by a multi-stakeholder group of experts from the investment industry, intergovernmental and governmental organizations, civil society and academia. The process was coordinated by the United Nations Environment Programme Finance Initiative and the United Nations Global Compact (see: [www.unpri.org](http://www.unpri.org)).
- 101 The campaign was launched in 2002 by a coalition including Global Witness, the Catholic Agency for Overseas Development, Oxfam, Save the Children UK, Transparency International UK and George Soros, Chairman of the Open Society Institute. A number of national NGO coalitions are now associated with it, for example, in Australia, Azerbaijan, Cameroon, Chad, Congo, the Democratic Republic of the Congo, France, Georgia, Ghana, Indonesia, Kazakhstan, Kyrgyzstan, Liberia, Mauritania, the Netherlands, Nigeria, Norway, the United States and the United Kingdom.
- 102 The international community has recognized the link between natural resources and conflict. A number of United Nations investigations into resource-related conflicts in Angola, Sierra Leone, Liberia or the Democratic Republic of the Congo confirm this link. A report on Angola was the first in a series of reports on the topic (see United Nations documents S/2000/203, S/2005/699, S/2007/40, S/2001/1072, S/2001/357, S/2001/49, S/RES/1653, S/2001/1015 and S/2000/1195). In June 2007, the Security Council further recognized the role of natural resources in armed conflicts, and suggested that the mandates of United Nations peacekeeping operations should consider helping the governments of resource-rich countries to prevent their illegal exploitation from fuelling further violence. It also underlined the importance of commodity monitoring and certification schemes, and of strengthening contributions by existing sanctions committees and various groups and panels created by the Security Council (see [www.un.org/News/Press/docs/2007/sc9060.doc.htm](http://www.un.org/News/Press/docs/2007/sc9060.doc.htm)).
- 103 There is no internationally agreed instrument, either legally binding or voluntary on conducting business in unstable areas in a way that minimizes conflict risks and human right abuses.
- 104 See [www.smartsanctions.se](http://www.smartsanctions.se).
- 105 For example, they have been included in BP's agreements with the relevant governments in connection with the Baku-Tbilisi-Ceyhan pipeline, and in the contractual agreement with the Papuan police in Indonesia. They have also been included in training programmes for public and private security forces, for example in connection with Occidental Petroleum's activities in Colombia. The IFC incorporates them in its Performance Standards on Social and Environmental Sustainability, and the OECD in its Risk Awareness Tool for Multinational Enterprises in Weak Governance Zones (Source: UNCTAD, based on information provided by the Secretariate of the Voluntary Principles on Security and Human Rights).
- 106 At the 2007 Big Table there was a proposal to set up a study group comprising representatives from African research centres, the Economic Commission for Africa, the African Development Bank, the ICMM, the Commonwealth Secretariat and the OECD's Development Assistance Committee to review mining codes in Africa (see [www.uneca.org/thebigtable/summary-report.htm](http://www.uneca.org/thebigtable/summary-report.htm)).
- 107 For example, a United States mining company, Drummond, has been accused of conspiring to murder three union activists in Colombia, and is facing trial in its home country. See "US mining group faces trial over dead activists", *Financial Times*, 8 July 2007.
- 108 The World Mines Ministries Forum was first convened in Canada in 2000 as a venue for high-level dialogue, sharing of best-practices and capacity-building. Forums have been organized in 2002, 2004 and 2006 (see [www.wmmf.org](http://www.wmmf.org)). The objective of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development is to enhance and promote the contribution of the mining, minerals and metals sector to sustainable development. Its functions are consultative and advisory, based on the principles of voluntary partnership. The Intergovernmental Forum meets to share experiences and information, to provide advice and, where appropriate, make recommendations for consideration by governments, intergovernmental bodies and others (see [www.globaldialogue.info](http://www.globaldialogue.info)).





## ANNEX TO CHAPTER VI

# TECHNICAL ASSISTANCE IN THE EXTRACTIVE INDUSTRIES: SELECTED EXAMPLES

Throughout chapter VI, reference has been made to the importance of developing the capabilities of governments in host countries. Technical assistance by various donor institutions (bilateral, regional and multilateral) can play a useful role in this context. As highlighted by the non-exhaustive examples of technical assistance provided below, various efforts are already under way. There is, however, a need for additional resources as well as better monitoring of the effectiveness of existing assistance programmes. Key areas include strengthening policy and institutional frameworks, capacities of government agencies to address economic, social and environmental concerns, enhancing transparency, revenue management, and the development of more participatory and inclusive mechanisms in decision-making processes.

### 1. Multilateral institutions

*UNCTAD* disseminates information about good practices and experiences through a dedicated website ([www.natural-resources.org/minerals](http://www.natural-resources.org/minerals)). *UNCTAD* has helped put in place a regional network for Latin America and the Caribbean with a focus on mineral resources and related sustainable development issues. The network is operated by the Universidad Nacional Mayor de San Marcos in Lima, Peru ([www.redlieds.org](http://www.redlieds.org)). A similar African network is expected to be launched during the course of 2007 in cooperation with Mintek (South Africa) and the Southern and Eastern Africa Mineral Centre. In addition, together with the United Nations Environment Programme (UNEP), the ICMM and the Department for International Development (DFID) of the United Kingdom, *UNCTAD* promotes best practices and policies related to environmental management and social issues related to mining.<sup>1</sup>

With respect to energy, *UNCTAD* has developed training manuals on the use of financial instruments and hedging instruments. Activities have focused on Africa, with a view to assisting

member States in developing their oil and gas industries (upstream and downstream). Advice is offered on the financing of oil and gas investment, trade and procurement activities, and management of revenues.<sup>2</sup> Annually, *UNCTAD* organizes an oil and gas trade and finance conference in Africa that brings together major players from the private and public sectors. In the context of revenue transparency, *UNCTAD*'s Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting has been developing and providing guidance on good practices and capacity-building to countries in a number of relevant areas of activity.<sup>3</sup> Tailored programmes can be developed to assist government officials and other stakeholders in developing countries acquire the necessary capabilities to ensure accurate and transparent revenue disclosure relating specifically to the extractive industries.

With respect to non-fuel minerals, *UNCTAD* has also engaged in a cooperative project – the Resource Endowment Initiative – with the International Council on Mining and Metals (ICMM) to analyse how some countries and companies have successfully dealt with the “resource curse.”<sup>4</sup> At the country level, a project concluded in 2007 in Peru sought to establish and apply a framework for multi-stakeholder assessments of development strategies and growth paths, and to identify viable employment opportunities for redundant mine workers, initiate actions to establish new economic activities and promote sustainable commodity production.<sup>5</sup>

The overarching objective of the *World Bank Group* (WBG) in extractive industries is to help ensure that oil, gas and mining contribute to the sustainable development of countries and communities. The Bank (through the International Bank for Reconstruction and Development and the International Development Association) focuses mainly on working with governments in the areas of policy advice, capacity-building and governance issues, including helping to ensure that revenues from extractive industries are used well

(occasionally supporting physical investment such as gas infrastructure). In recent years, the Bank has joined a number of global initiatives intended to address common extractive-industry issues. For example, it is helping more than 20 countries with the practical implementation of the Extractive Industries Transparency Initiative (EITI). Other initiatives include the Gas Flaring Reduction Partnership, which is intended to help overcome barriers to the reduction of gas flaring, and the Community and Small Scale Mining initiative, which addresses issues concerning small-scale mining.

The *International Finance Corporation* (IFC) and the *Multilateral Insurance Guarantee Agency* (MIGA), also part of the World Bank Group, selectively support private sector investment projects through a range of financial products such as loans and equity investments and political risk insurance. Both institutions aim to help investors enhance the sustainable impact of the projects they support by encouraging greater transparency about project activities, including requiring the publication of all payments made to governments. They also work with investors to broaden the development impacts of projects, for example through linkage programmes intended to extend the range and development of local suppliers to mines and oil developments.

The *Commonwealth Secretariat's* Special Advisory Services Division has assisted many Commonwealth Governments to reform and modernize the regulation of their oil, gas and mineral industries. The goal of this assistance is to help governments develop regulatory and fiscal regimes that are investor-friendly, but which nonetheless secure them a fair share of the financial benefits that can arise from oil, gas and mining activity while respecting the need for robust environmental and social safeguards. In the oil and gas industry, assistance has been provided to the Governments of Ghana (to implement reforms of upstream petroleum regulations, Namibia (on reforms of regulatory and institutional arrangements), the United Republic of Tanzania (on petroleum and energy agreements) and Belize (on establishing a transparent system for managing petroleum revenues through a dedicated fund). In the mining industry, assistance in the development and drafting of major legislative reforms in the mining sector have contributed to the Mines and Minerals Act of Botswana and the Minerals and Quarries Act 2005 of the Gambia. The Minerals Commission of Ghana has been assisted in the development of mining regulations, and the Governments of Kenya and Swaziland have received technical support for the reforming of sector policies and legislation.

## 2. Regional institutions

The *African Development Bank* (AfDB) has been active in the extractive industries for nearly three decades, through its lending and non-lending operations. It has provided various forms of related technical assistance to 11 African countries (amounting to \$680 million), mainly focused on the restructuring and capacity-building operations of State-owned enterprises or the extractive industry as a whole.<sup>6</sup> Recent reform programmes have stressed pro-poor public expenditures and job creation for vulnerable groups, particularly in the zones where the extraction activities take place. Increased attention is being given to the promotion of better governance, transparency and accountability. Some projects have addressed the social and environmental aspects of extractive-industry development. Consistent with its commitment to transparency, accountability and good governance, the African Development Bank has endorsed the EITI principles and criteria and holds an observer seat on the new EITI Board. In January 2007, it organized the Big Table 2007 jointly with the United Nations Economic Commission for Africa (box VI.7).

The AfDB is in the process of establishing an African Legal Support Facility which will be able to provide technical support in preparing appropriate laws and regulations for extractive industries; review existing legislation to ensure that budget, revenue, taxation and related laws provide for proper public disclosures; offer training workshops for legal and financial advisers to strengthen their negotiating capacities; and give technical legal support in contract negotiations. The AfDB, the World Bank and the Norwegian Agency for Development Co-operation have agreed to increase collaboration in the areas of EITI implementation and small-scale mining, and to support the creation of a geological data base.

Over the past decade the *Asian Development Bank* has undertaken 16 technical assistance projects (worth \$9.8 million) related to reform of extractive industries in six countries: Bangladesh, China, India, Indonesia, Papua New Guinea and Sri Lanka. The Bank has also provided regional technical assistance to study gas transmission and natural gas pipelines in the Central Asian region. During the past decade the *Inter-American Development Bank* has provided six grants worth \$1.8 million for two countries (Ecuador, Uruguay) and for four regional operations to strengthen regulatory frameworks and harmonize markets in the oil and gas sectors. Most of the activities were in connection with loans for gas transportation.

### 3. Bilateral donor support

*Canada* has extensive expertise in natural resource development and management, and has supported programmes that have contributed to sustainable mining, oil and gas development, especially in Latin America. During the period 1996–2006, the Canadian International Development Agency (CIDA) provided mineral resources and mining-related assistance amounting to about \$137 million, distributed equally between the oil and gas industry and metal mining. Almost two thirds of this assistance was provided to Bolivia, Pakistan, Peru and South Africa. These investments have included a number of programmes geared towards institutional capacity-building and cooperation, technology transfer, training and consultancy services.<sup>7</sup> CIDA supports the EITI.

The Government of *France* promotes capacity-building in the extractive industries mainly through training and technical assistance notably to Francophone countries. Under the supervision of the Centre d'Etudes Supérieures Des Matières Premières (CESMAT), training is provided by Ecole Des Mines de Paris and the College of Geology in Nancy to mining-company executives and to public officials in mineral-producing countries. Technical assistance is provided by the Bureau de Recherches Géologiques et Minières (BRGM) in areas such as the development of knowledge of mineral resources and production techniques. Countries that have benefited from French support in these areas include

Burundi, the Central African Republic, Gabon, Guinea, Malawi, Senegal and Thailand.

*Norway* offers various forms of short- and long-term assistance to petroleum-rich developing countries through its Oil for Development Initiative.<sup>8</sup> During the period 1994–2004, Norway provided petroleum-related assistance amounting to approximately \$70 million to more than 30 developing countries, 85% of which went to 10 countries: Angola, Bangladesh, Eritrea, Mozambique, Namibia, Nigeria, the Philippines, the United Republic of Tanzania, Timor-Leste and Viet Nam. The assistance focused on competence- and capacity-building on petroleum resources, financial administration and the environment, but did not involve transfers of funds. It provided seminars and exchange programmes aimed at sharing Norwegian experiences, as well as comprehensive and long-term tailored support to selected countries in the form of extensive training and institutional cooperation.<sup>9</sup> In the next few years, the Oil for Development Initiative is set to expand.<sup>10</sup>

*South Africa* offers various forms of assistance related to extractive industries in several African countries. The Department of Minerals and Energy provides pro bono technical assistance; PetroSA also offers technical assistance within the framework of various joint ventures with domestic oil companies for the exploration or development of the oil and gas sectors in their countries. The Diamond Board helps developing countries to upgrade their systems in order to become compliant with the Kimberley Process Certification Scheme.

## Notes

<sup>1</sup> See [www.goodpracticemining.com](http://www.goodpracticemining.com).

<sup>2</sup> Outside Africa, in-depth advice and training has been provided to GAIL (India) Ltd., one of Asia's leading natural gas companies, on how to improve its financial management by incorporating risk analysis and management in its strategy.

<sup>3</sup> These areas include qualification requirements for professional accountants, corporate governance disclosure, accounting and financial reporting of environmental costs and liabilities, as well as accounting and financial reporting by small and medium-sized enterprises.

<sup>4</sup> Four country case studies, on Chile, Ghana, Peru and the United Republic of Tanzania, form the basis of the project and have been summarized in a separate report (ICMM et al., 2006).

<sup>5</sup> The project was carried out in cooperation with the Government of the province of Espinar, the local mining company BHP Billiton Tintaya (since July 2006 Xstrata Tintaya) and the Universidad San Agustín in Arequipa.

<sup>6</sup> For example, the Bank has assisted in the restructuring of large State mining industries in Guinea, Mauritania, Tunisia and Zambia. It has also provided technical assistance in the form of capacity-building programmes and the funding of feasibility studies to countries such as the Democratic Republic of the Congo, Ethiopia, Mauritania, Mozambique, Rwanda, Senegal and Uganda.

<sup>7</sup> In Bolivia and Peru, CIDA has contributed to the development of effective regulatory frameworks to ensure that investments in

mining, oil and gas contribute to poverty reduction, in addition to promoting stakeholder consultations, better environmental, health and safety management, and responsible enterprise practices.

<sup>8</sup> A number of Norwegian public and private institutions are involved in the implementation of the programme, including the Norwegian Petroleum Directorate, the Norwegian Pollution Control Authority, the Petroleum Safety Authority, Norway, and the International Programme for Petroleum Management and Administration. Personnel from ministries and from consultancy firms also participate. The content of each programme is tailored to the specific requests of each country.

<sup>9</sup> An evaluation of Norwegian petroleum-related assistance from the early 1980s until July 2006 was recently carried out using case studies of four countries: Mozambique, Bangladesh, Timor-Leste and Angola (NORAD, 2007). It concluded that support had been successful on petroleum-related technical capacity-building issues but that less emphasis had been put on downstream issues, petroleum economics, health, safety and the environment. The assistance had been more successful in "new" petroleum-producing countries than in the more mature ones.

<sup>10</sup> Its current long-term assistance is focused on the following countries: Angola, Bolivia, Iraq, Madagascar, Mozambique, Nigeria, Sudan, Timor-Leste, Uganda and Viet Nam. Short-term activities will be offered to a number of other countries.





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