Chapter 12

SUSTAINABLE DEVELOPMENT AND IRON ORE PRODUCTION IN SIERRA LEONE: THE NEXT FIFTY YEARS

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12.1 Introduction

The current commodities boom opens up tremendous opportunities for Sierra Leone to break out of the cycle of poverty and underdevelopment, through the judicious use of the extensive natural resource endowments of the country. The experience of the post-independence era, when diamonds, rutile, iron ore and bauxite offered similar prospects for a natural-resource-led growth, has been dismal. For various reasons, but principally because of the policy choices adopted in the past and the economic development path followed, the country eventually descended into conflict. Fifty years later, the country now faces a similar future, and this time around only a different route charted carefully after drawing from the experience of the past, and learning from the pitfalls of others, can enable the country to avoid the same trajectory that led to a total collapse of the state.

Recently, mining companies with exploration or exploitation licenses have confirmed large deposits of iron ore, gold, rutile, bauxite, extensive deposits of rare earths, as well as good prospects for petroleum.

At this time in the country's history the transformation of the economy requires large inflows of resources, beyond what is available domestically and what is received as normal aid flows. Prudent use of those resources can lead to exploitation of these mineral deposits in a way that can transform Sierra Leone's economy within 10–15 years. The exploitation of these iron ore deposits have the potential to generate a significant part of the financial resources required to transform the economy, and more importantly, to stimulate directly and indirectly other sectors. However, these prospects and opportunities also present risks similar to what the country faced in the past, but this time around

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TABLE 12.1. Estimated reserves for selected minerals, 2010.

Iron ore	Gold	Rutile	Bauxite
13 billion tons	4.5 million ounces	600 million tons	2 billion tons

Source: company websites and estimates from the Ministry of Mines.

the effects could be worse.[1] By all indicators, Sierra Leone's best period ended in the early 1980s. Hence, the country must modify its strategy for exploiting its natural resources, if it is to obtain results different from those experienced in the past 50 years.

This chapter argues that, for Sierra Leone, the strategy that focuses on maximizing government revenues from mineral extraction has not provided optimal benefits to the country in the past, and therefore advocates a more comprehensive approach that will maximize the benefits of mining to the entire development process. In the past, government policy on minerals extraction, influenced by external advice that in turn was based on the prevailing theories, revolved around the proportion of revenues accruing to the country as compared to the foreign investor's share.[2] This largely ignored the country's capacity to even determine what the true values of gains from the extraction are, and the reality of how revenues that do flow in are then managed.[3] The orientation adopted in this paper places emphasis on the overall contribution to the development process, and reviews some of the links in the iron ore value chain in order to identify opportunities that can be harnessed by the local economy, with a special accent on how to maximize the non-revenue benefits of mining the ore.[4]

Section 12.2 presents a picture of the current need for massive injections of resources required for the development activities envisaged, and the potential offered by mineral revenues. Section 12.3 outlines briefly the history and background of iron ore mining in Sierra Leone. Section 12.4 argues for a dissection of the value and supply chain for iron ore in order to determine the potential for local participation at each link of the chain, and measures that

[1] By the early 1980s all the elements of the natural resource curse were evident in the country: growing inflation, increasing unemployment, expanding income inequalities, plus the erosion of political and economic governance manifested by the one-party system, the dominance of a few businessmen in the economic affairs of the state, etc. This time around and less than 10 years after the conflict, there are signs from the minerals sector that some of these are already emerging.

[2] See Otto *et al.* (2006). Thus, in the past, for example, negotiations over mineral agreements revolved around royalty and tax payments by the investor with passing references to local employment and business stimulation opportunities.

[3] In short, how to convert the wealth in the ground to investment opportunities rather than merely expanding consumption opportunities, the institutional and other weaknesses in financial management, etc. – the realities of a post-conflict and fragile economy.

[4] This orientation eschews the usual enclave nature of the extraction process to one that fully integrates it into the rest of the national economy.

could augment such levels. Section 12.5 analyses the country's experience in negotiating agreements and the outcomes obtained. Section 12.6 juxtaposes the socio-political dynamics of the fragile state and the behaviour of the investor prepared to take the high risks, in order to explain the current nature of iron ore operations. It further argues that where the government's objective goes beyond revenues to include obtaining maximum benefits for overall development, better outcomes may be obtained. Section 12.7 evaluates the current montoring arrangements in place for mining agreements and discusses measures for improving them. Section 12.8 examines the complex challenges related to the management of revenues from mineral taxes. Section 12.9 warns against the possible negative socio-political effects of poor management of the industry. Section 12.10 concludes the chapter with recommendations for action to be taken now in order to avoid errors of the past, and to take maximum advantage of all the opportunities for value addition locally, as a contribution to sustainable development.

12.2 Background

The current government's *Agenda for Change* (Republic of Sierra Leone 2008) – its plans for the transformation of the country – calls for public sector investment in the order of US$1.92 billion over the five-year period. Similarly, estimates for achieving the Millennium Development Goals (MDGs) call for a flow of resources in both the private and public sector amounting to US$12–15 billion in the next five years. *Vision 2025*, a document outlining the country's aspirations for the coming decade, when translated into plans and programmes, calls for even greater investment funds from all sources.

Yet, notwithstanding the surge in foreign direct investment (FDI) to sub-Saharan Africa between 2004 and 2009, when inflows jumped from under US$20 billion to almost US$59 billion,[5] post-conflict Sierra Leone has been receiving relatively less than its neighbours (Guinea received US$141 million and Liberia received US$378 million compared to Sierra Leone's US$33 million in 2009).[6] The last donor conference on Sierra Leone held in London at the end of 2009 did not mobilize additional aid funds over and above the level of previous years – an average of US$350 million per annum.

West Africa is now being described as iron ore's new frontier (Reuters 2010) with all four countries of the Mano River Union possessing large deposits that, when added to the Mauritanian exports, could account for just under 10% of the world's supply, compared to 1% exported in 2009.

Indeed, if current plans materialize, the region will be exporting at least 500 million tons per annum in the next five years, yielding considerable revenues to governments for development. The multiplier effects will go well

[5] UNCTAD database (see www.unctad.org/fdistatistics); African Economic Outlook 2011.

[6] The figures for 2010 and 2011 are significantly higher thanks largely to investments by two iron ore mining companies.

beyond the US$1.5 billion from royalties plus other fiscal gains that such exports will yield.[7]

In these circumstances, the announcements of iron ore deposits and the projected government revenues to be derived from its extraction will have the potential to provide a substantial part of the revenues required to meet the urgent development needs, particularly in infrastructure. Additionally, the nature of the process of iron ore extraction has the potential to influence positively the development fortunes of the country over the next 10 years.[8] Two reasons justify this optimism: firstly, iron ore indexed prices are expected to hover around US$125 (65% Fe FOB) per metric ton over the next 5–10 years – up from an average of US$50 per ton in 2009.[9] Secondly, the industry's activities, if managed and organized well, will have potentially direct and indirect effects[10] on other sectors of the economy.

The government's stated objective[11] is to obtain optimal benefits from the mining industry. Until recently, such benefits were conceived primarily in terms of maximizing tax revenues, expanding direct employment, and minimizing damage to the environment. Although there is no universally accepted definition of what is optimal, various assessments and long-term vision of stakeholders[12] claim to be maximizing the direct and indirect benefits to the economy both in the short and long term, while minimizing the negative environmental costs in both the short and long term (Otto *et al.* 2006). The results have not reached expectations, as evidenced by the decline in the economy leading to its eventual collapse and rebel war. The strategy proposed in this chapter goes a step further than the usual concentration on revenues to be earned, and increasing the stage of processing within the country.

[7] Assuming similar growth multipliers as in Kargbo (2011), an investment of US$10 billion per annum in the mining sector can be expected to generate US$70 billion of economic activities.

[8] Although it is now known that there are exploitable reserves of petroleum, these will take up to 6–8 years to come fully on-stream.

[9] Currently (first quarter 2011), it ranges from US$150–US$210 pmt (China 62.5% Fe).

[10] This goes beyond the 'backward and forward' linkages, first advanced by Hirschman, and which refers to the inputs purchased from the economy (backward linkages) by the company and the inputs sold (forward linkages) to the economy, as outlined in subsequent sections of this paper.

[11] Presidential Task Force for the Review of Mineral Rights; Strategy and Policy Unit, Office of the President (2008), Terms of Reference.

[12] For example, the National Mining Association of the United States defines it in terms of maximizing sustainable development from the social, environmental, and economic perspectives. (The iron mines directly contribute US$1.8 billion to the economy of Minnesota every year in the form of purchases, wages and benefits, taxes, and royalties. Subsequent business impact induced as the result of iron mining is responsible for more than an additional US$1.6 billion – making the total economic impact US$3.1 billion on the state and region's economy. Currently the mines directly employ approximately 3,000 men and women, with an additional 1,210,000 employed in vendor jobs (Iron Mining Associates of Minnesota, mission statement and vision).)

TABLE 12.2. Iron ore exports 1947–53.

Year	Tonnage exported	Total export value (pound sterling)
1947	642,300	—
1948	926,370	4,249,167
1949	974,050	5,340,915
1950	1,142,621	6,661,232
1951	1,184,735	10,068,449
1952	1,378,959	9,924,799
1953	1,200,240	11,738,769

Source: Jarrett 1956.

The alternative methodology takes as its point of departure the goal of long-term contribution of the industry to sustainable development of the economy rather than maximizing revenues, or the government's 'take' (see Otto *et al*. 2006) only. By unbundling the value chain of iron ore to ascertain the links or sublinks that can be provided within the country,[13] the economy's 'participation' and potential gain in the process of value addition for the mineral can be maximized.[14] This is not to suggest that maximizing revenues should be abandoned.

12.3 History and Evolution of Iron Ore Mining

In Sierra Leone, iron ore was mined in the Port Loko district where a very high-grade ore was extracted by a British company incorporated locally as Sierra Leone Development Company (Delco), and with little processing exported primarily to the United Kingdom, United States and Germany from 1933 to 1975. At its height in 1952, annual production amounted to 1.5 million tons per annum (mtpa), and in terms of value, exports exceeded that of diamonds. Values quoted amounted to £9.92 million pounds.

There were two types of deposits mined in Marampa: hematite and hard laterite. The mined ore contained about 50% metallic iron but the ore was then concentrated to about 67% (95% iron oxide, Fe_2O_3). The concentrated product was conveyed to the port, Pepel, by a railway completed in 1933. The railway was used primarily by Delco during its years of operations and handed over to

[13] The intention is not to impose high cost production inputs but rather to seek local solutions for goods and services used in the supply chain. To illustrate, it is cheaper in the long run to train a local engineer who can perform and replace the services of a more expensive expatriate after five years. However, unless the government intervenes, an individual company will not invest in such training with the risk that the trained personnel will go to another company.

[14] See African Union (2009) for a presentation that describes the goals to be achieved here.

government for commercial purposes when the company stopped operation in 1975. By 1952, the company had a labour force of 2,834 Sierra Leoneans. All production stopped in 1975, due to the exhaustion of higher-grade ores and the inability of the firm to secure the investment required to continue its operations. Since then there has been no mining activity in the area until after the war, when some operators succeeded in obtaining exploration licenses that have now been converted into full mining companies.

The estimates of reserves in known iron ore deposits are as follows:

African Minerals:	11.2 billion tons
London Mining:	900 million tons
Marampa Mines (Cape Lambert):	850 million tons

In addition, the Chinese King Ho group is examining locations close to the Gola Forest that is speculated to contain about 30 billion tons. In the next 18 months the results of exploration in that area will confirm the extent and nature of these deposits.

Currently, there are two operators with industrial mining licenses; London Mining operating the area mined earlier by Delco, with estimated reserves of almost 900 million, and African Minerals, with reserves of 11.2 billion. Neither company has operated a large iron ore mine before, nor is either quoted on the major stock exchanges so far.[15] although African Minerals has plans to seek listing. Two other mining companies with experience in iron ore mining, Cape Lambert and Kingho, have exploration licenses only.

The four countries constituting the Mano River Union (MRU) – Guinea, Sierra Leone, Liberia and Côte d'Ivoire – would secure greater benefits from the ore if they were to coordinate their strategies and adopt a regional approach to exploiting the deposits. Indeed, the Nimba belt containing deposits of the ore stretches from Liberia through Sierra Leone to Guinea.[16] A subregional initiative, when undertaken in collaboration with investors, would yield maximum benefits to all parties. There are additional opportunities for extracting further gains by carefully exploiting all components of the value chain in a larger West African market; benefits include a more efficient (lower cost) access to the sea that is not restricted by national boundaries, economies of scale for staff training, logistics, research, and even processing. Plus, there would be clear advantages from information sharing, coordinating the development of, and sharing the benefits from, shipping and port facilities, etc. Arcelo Mittal and BHP Billiton failed recently to combine their operations into a single joint venture in Guinea and Liberia that could have reaped the benefits of scale and joint action. However, because such gains exceed the narrow commercial interests of each company, the joint intervention of both host governments, or the regional subgroup, the Mano River Union, could have provided guarantees

[15] Both are listed in AIM, the stock exchange for smaller companies.

[16] For a more detailed description of the geological formations within which iron ore deposits are found, see Obafemi (2010).

or deal-breaking incentives.[17] The case of Mittal importing 32,000 tons of crushed rocks for its railway in Liberia could also have been resolved by sourcing the extensive quarries in Sierra Leone at costs that would have likely been lower.[18] In short, the joint interventions of the host governments, through guarantees and incentives, could promote joint extraction and offer greater opportunities for the economies of the countries.

12.4 Securing the Optimal Contribution of Iron Ore to Sierra Leone's Development

As pointed out earlier, the most evident and immediate effects of iron ore production are the revenue windfalls it will generate for the government's budget. The full potential effect, however, would be realized if it were possible to locate the entire value chain, from mining the ore to processing and marketing the final product within the country. This, of course, is clearly not feasible. However, it could be used as target to be aimed at; provided efficiency and effectiveness are not sacrificed, and recognizing that the foreign investor must also obtain a fair share for her investment. Put differently, there should be a deliberate effort made to identify possibilities for the country's maximum participation in the links of the value chain. Once this is done, government should use guarantees, incentives and support to ensure the exploitation of these opportunities, resulting in a win–win situation for both the country and the company. To do so requires unbundling the package of activities from ore extraction to final product, and pinpointing all the services supporting the process. This will show up the various services or processes that could potentially be located within the country or for involvement of the nationals. Such mutually agreed measures should be part of the agreements with mining companies.

Two types of activities can be identified in the value chain, and classified as 'visible' and 'invisible'.[19] Visible refers to the services directly related to the extraction process (drilling/upgrading the ore content/health services/catering services/construction/protective wear and preventive maintenance); the processes and measures for refinement before export (sinter feed/pellets, etc.); the provision of energy; the supply of water, transportation of the product to the coast for export (road and rail construction/dredging of waterways/ports development); and shipping to the world markets.

[17] The failure was announced on 8 September 2010.

[18] The Minister of Lands, Mines and Energy, Dr Shannon, justified the importation of 32,000 tons of ballast (crushed rocks) by Mittal for building the railway, with the explanation that local supplies were insufficient (24 September 2010).

[19] This is slightly different from the usual forward and backward linkages and includes activities that are not directly and only part of the production process, e.g. banking.

Invisible activities are back-room-type services that support the extraction and refinement process and include research (e.g. testing of soil samples, application of new technologies, resolving operational technical problems, use of specialists consultants); logistics (including vehicle maintenance, personnel services, office supplies, and administrative support); food supply (such as catering and basic shopping), internet technology support (namely, service providers, database and website support); and entertainment services, banking and insurance services, and travel services.

In addition to unbundling the value chain to identify potential nationally produced goods and services, there should be coherence between the public sector's development strategy, plans and programmes on the one hand and the programmes and activities that form part of the mining enterprise on the other. Thus, national employment programmes, infrastructure plans, revenue flows and environmental management programmes must all, in one form or the other, take account of the activities of the iron ore extraction industry.

What is envisaged is not merely expanding the government's 'take', a tactic that pits the company's interests against that of the country. Rather, the intention is to identify, with the company, longer-term options that would lower long-term costs by making use of low-cost local options. A simple everyday example is illustrative. The driver of a piece of complex earth-moving equipment may not be available locally. Hence, the company will bring in an expatriate at considerable cost in the short run. However, local drivers could be trained to operate such machinery and in time will take over. A carefully crafted training programme for the industry will lower long-run costs, while the country's employment levels will increase. What is advocated here is for both government and the company to plan for increased local participation, with respective responsibilities clearly defined. For the government this would be through training, common support services, accreditation, etc., and companies will more proactively seek local solutions, but without compromising quality or efficiency.

In the past such considerations hardly featured in the agreements signed with the mining company. This time around the agreements should contain provisions to cover such activities. Hence, negotiations of the agreement with the company must be done only after careful planning and reflection over how best the extraction process will fit with the country's overall development strategy, and how it will stimulate the local private sector and improve the competitiveness of local firms. Equally important will be the steps government will take in close collaboration with the private sector to make use of the opportunities offered.[20]

The provisions in the agreements that relate to five areas would require greater precision, namely,

[20] The past and new mining legislation have a standard provision for local procurement contained in all agreements, but this has hardly ever been enforced in the past. Government will now have to improve enforcement in combination with incentives to mining companies, support to potential local private sector, and aggressively organizing for greater local content.

1. employment,
2. infrastructure,
3. environment,
4. community participation,
5. revenue flows.

These cannot be left to current laws, as in the past, which were not designed to regulate long-term issues involved in 25-year investments.

Employment. Here, the objective is to maximize the recruitment of Sierra Leoneans, rather than expatriates, throughout the life of the mine, not only in the visible activities, but also equally in the invisible support services. The provisions in the mining agreement relating to the use of locally available expertise and local participation in subcontracts need to be carefully crafted for this purpose and, at the same time, to develop an integrated (national and expatriate) workforce. This would be one way to avoid sowing the seeds of discontent. An important dimension is the long-term provision of national experts. Here, one option could be to encourage the mine operators, as part of corporate social responsibility, to engage in a *public/private partnership* for supporting a mining engineering faculty within the university. The option of using revenues for such targeted goals has not worked in the past because of shortcomings in the budget system, leakages, and institutional rigidities. These shortcomings will take some time to correct and hence this interim approach could be justified.

Closely linked to employment is technology transfer. Companies should be encouraged to use the new facilities being set up within the country for tests and, in collaboration with the university, to undertake basic research for mine operations. A well-established system of internship for graduates will ensure a good supply of relevant skills throughout the life of the mine – over 50 years by current estimates. In terms of direct activities, opportunities should be given to local companies for partnering with international firms introducing new techniques and technologies in providing one or more of the links in the supply chain.

Infrastructure. Iron ore extraction, like mining of other base metals, involves major infrastructure for refining, transporting, and even the development of the mine itself: rail, roads, shipping, and energy including electricity, dredging, and the general administration of ports. Again, adequate preparations by the relevant government authorities are needed to determine the ideal configuration for all infrastructure development before the commencement of negotiations with companies on location of transport routes, phasing of power supplies, and use of waterways. Currently, the company negotiates separately with each authority generally outside the mining agreement. As a result, the government misses the opportunity of securing better outcomes that could be derived from a more unified national approach, one that would take into account the long-term plans, synergies and interlinkages among all entities.

Environmental considerations. The Environmental Protection Act of 2008 does not contain detailed provisions to cover the mining sector and primarily relies on the Environmental and Social Impact Assessment reports for control and management of the effects of the mining operations on the environment.[21] This has led to the anomaly of environmental issues being treated in three separate sections of an agreement:

1. fiscal, for performance bonds required for mine closure;
2. mining operations, for issues related to mining technology;
3. environment issues, for the economic and social impact analysis (ESIA).

Here is another case of segmented approaches resulting in suboptimal benefits to the country.[22] The way out is to deal with environment issues comprehensively integrating all dimensions into one regime.

Community participation. One of the first actions to be undertaken even at the time of exploration is the dialogue between the company and the local communities. A system should be put in place for continuous dialogue, not only regarding any corporate socially responsible actions envisaged, but also for the use of community funds. Government must restrict itself to the role of honest broker and remain aloof in negotiations at this level. This stance could later be vital in times of tensions between the two parties.

Revenue flows. The complexity of accounting methods and techniques used by transnational firms make it difficult for the typical government accountant to monitor financial flows within the multinational company, and deal with transfer pricing in its various forms. At a minimum, therefore, in order to ensure that the appropriate share of revenues accrues to the country, an international audit firm should routinely be employed to review the accounts and financial operations of the company.

12.5 Contract Negotiations: Terms and Conditions for Extracting the Ore

The process of extracting the ore and its export from the host country are undertaken in partnership with a foreign investor. The terms and conditions of the partnership are usually defined in a minerals agreement that is negotiated between the two parties. The agreement therefore defines in large measure the gains that the country secures from the extraction of its natural asset.

[21] Detailed regulations to complement the Act are now under preparation.

[22] Since ESIAs take some time to prepare, evaluate and approve, companies commence operations on the basis of approvals by the other entities, but the Sierra Leone Environment Protection Agency (SLEPA) awards a temporary permit only.

This section examines Sierra Leone's experience so far, and proposes how the country can obtain more favourable provisions in the agreements signed with investors.

There are five factors that largely explain the unfavourable agreements that the country has signed in the past and that have diluted the country's gains from mineral exploitation: poor preparations preceding the negotiation of an agreement; improper representation at the negotiating table; dysfunctional systems combined with poor coordination among institutions dealing with different aspects of the mining operations; corruption; and weak legislation.

Successive governments have been saddled with poor contracts, partly because of the practice of reacting to proposals from mining companies rather than presenting government's proposals, and partly also because most of the companies operating in the country had little or no experience with full scale mining operations and care little about reputational risks. Not surprisingly, in the past there was little done in terms of due diligence of the companies, study of the market, and technology for the ore to be mined, etc. Nor is a negotiating strategy agreed upon before meeting the companies. In any event negotiations often have concentrated on revenue flows, with environmental issues receiving marginal attention. This is consistent with the prevailing school of thought that calls for maximizing the net present value of income streams from the company.[23] It is also similar to the approach that focuses on the total take by the government as compared to that of the company (see Otto *et al.* 2006). The general mantra of international finance institutions until recently emphasized the creation of a 'friendly' business environment, rather than stable development conditions for sustained growth of the entire economy. 'Friendly' generally referred to the conditions for the foreign rather than for the local investor. Hence the agreements spell out tax breaks, the general conditions for the operation of the foreign investment, the regime of fiscal concessions, the stabilization clauses that protect the investor from changes in the law, and protection against nationalization, etc. Sustainable development hardly features, even as a phrase, in the agreements.[24] The weaknesses in the state's capacity to negotiate, monitor, and take the initiative, inevitably leave the country with relatively few benefits. The abuse of transfer pricing abounds. For example, in the recent renegotiation of an agreement, a company that 'sold' the product of the mine to its parent company was found to be charging over US$2 million annually as marketing fees!

After poor preparation, in the past, Sierra Leone left negotiations to the Ministries of Mines and Finance, and the Legal office. Yet disposing of the

[23] Tilton (2004) prefers maximizing net present value of social benefits but doubts that using the tax rates will be helpful.

[24] There are no known cases where IFIs have recommended postponing the extraction of a mineral on the grounds that the conditions are not ripe for the country to obtain optimal benefits from it. Not that this approach is necessarily the best, but if sustainable development is the overall goal of the country then the exploitation of a strategic natural resource must be designed with more than revenue maximization in view.

country’s patrimony concerns all and sundry, and at the least should command the direct attention of the highest office. And the normal situation is for the government’s delegation to consist of the political heads of these ministries supported by one technical member of staff and a foreign consultant. With laws and regulations not designed for managing natural resources effectively, agreements governing their extraction need to be comprehensive and detailed. However, the voluminous documentation involved cannot be handled by the usual few officials representing the government, half of whom are political heads, acting in isolation. A team supported by professionals should be set up solely for negotiations.[25]

Although the country formulated a number of development plans, structural adjustment programmes, and more recently PRSPs, it is striking that, despite the potential importance of natural resources in the country’s development, no development strategy has been woven around the opportunities and challenges of depleting a natural resource; and negotiations with companies for mining concessions have not incorporated the country’s overall development programme in determining the minimum expectations from the agreements. Indeed, preparations for negotiations hardly occurred, as the practice consisted primarily of getting reactions to a company’s submissions for fiscal concessions.

Nor has there been a home for the process; i.e. no single entity has the responsibility for agreement. The fiscal discussions take place in the Ministry of Finance, outside the reviews of technical operations done by the Ministry of Mineral Resources. The latter pilots the agreement through parliament, even though the most controversial provisions relate to finance, environment, and local communities. The mining company normally negotiates terms for other aspects of its operations, such as for water use, port facilities, etc., outside the mining agreements. Furthermore, once agreements have been signed there is no mechanism for monitoring the implementation of the agreement’s provisions. Consequently the companies are under no pressure to meet all their obligations. In short, coordination and consultation are inadequate; the package finally adopted is therefore hardly coherent with the rest of the country’s development strategy.

Juxtaposing all of the above to the dysfunctional nature of the country’s institutions partly explains why the agreements were so lopsided and in turn limited the country’s gains from the extraction of the minerals.

We now turn to the fourth area of loss: legislation. Until 2009 the legal framework was outdated and granted extensive discretionary powers to the Director of Mining. The new act is more modern and a major improvement. However, changes introduced at the parliamentary level reintroduced the discretionary authority, this time to the minister, and set up a potentially convoluted system of controls through a Minerals Advisory Board with executive authority in addition to its advisory role; as well as a few ambiguous provisions. To make matters

[25] The government has now set up a core team that is supported by local and foreign specialists. If this team is allowed to operate freely, this will reduce significantly the likelihood of poorly negotiated agreements.

worse, the board is not independent of the ministry. These anomalies must be corrected in amendments to the act as soon as possible.

12.6 Dealing with the Non-technical Obstacles: A Post-Conflict Challenge?

The mining sector in Sierra Leone's post-conflict history is characterized by large numbers of small companies that acquire prospecting and exploration licenses that are typically sold to others within three years. For all the five industrial mining companies, ownership has changed hands at least twice within five years of operations. With such instability and frequent changes in leadership, it is no wonder that performance of the companies has been poor; since the 1980s, not one of them registered profits before 2009.[26]

As a post-conflict country riddled with weak institutions and beset with rumours of widespread corruption, Sierra Leone's mining industry attracts high-risk investors and bottom feeders.[27] However, neighbouring Liberia is a post-conflict country but does have more reputable and well-established mining companies. One explanation put forward by some observers is that after the departure of De Beers and SIEROMCO in the 1980s, the leading investors have been controversial figures, and that this in turn attracts similar operators. Such operators set up companies with relatively short-term horizons. Some of these investors are prepared to do whatever it takes, including using unorthodox methods to obtain unusually generous contracts, begin preliminary operations then sell out to more established companies. Occasionally such companies may advance through to mining operations. Not having established any credibility as sources for reliable supplies, such companies tend to sell to the spot market rather than through long-term contracts or are unable to secure good prices for long-term buyers, when they do undertake full mining activity. Being new, they usually lack the experience to proceed without the participation of a major miner. In addition, even when they attempt full production, they do not find it easy to mobilize funds.[28] They frequently encounter all forms of operational problems during production.[29] Negotiating agreements with such companies poses special challenges. In Sierra Leone all such companies obtain overgenerous agreements, all of which are also approved by parliament, an indicator of the type and level of support they can muster.

[26] A few months after the operations of the task force commenced, questions were being posed on the nature of the finances of large companies.

[27] Small mining operators who search for feasible mining opportunities partially develop them then sell to established firms.

[28] Having swallowed the bait, the government may well find itself providing letters of guarantees for the companies to get loans!

[29] The two mining companies have already had strikes, arson, litigation, etc., in their plants even before commencement of mining for export.

At the other end of the spectrum are larger, better established, and often integrated mining companies. These[30] are more concerned with stability, reputational risks, and a long-term relationship coinciding with that of the life of the mine – normally exceeding 25 years (Butler 2004). Companies like Vale or BHP Bilton are more equipped to deal with the challenges of new mines and the vagaries of the business cycles.

Governments are therefore faced with a choice between two types of investors: the large investor, or the bottom feeder (Gberie 2010). Under pressure for quick money, weak governments tend to favour the high risk takers and investors/speculators. They are nimble, spend seed money to establish the reserves, pay whomever and whatever it takes to get the license, etc., but do not go the long haul. It is therefore not surprising that they end up with overgenerous fiscal concessions. In short, their behaviour, conditioned by their shorter-term horizons, lack of concern with reputation, and weaker oversight from their home countries, produces outcomes that coincide with government officials' private need for immediate action and money. It is therefore not surprising that government officials find themselves defending these companies, pointing to the commencement of mining operations and the revenues accruing to government as justification. By so doing they inadvertently give up the neutrality and objectivity necessary to promote the public interests.

An equally worrying concern is that the country may suffer even further from their lack of experience through technical difficulties, plants shutdowns, staffing problems, etc. Unfortunately, because the government does not have the resources to obtain the basic information on the quantity and quality of ore deposits, it must depend on mining operators to do so on a first-come, first-served principle. This has limited the government's ability to award mining licenses to the best potential operator. As a result successive governments avoid taking the hard decision to refuse operators who would normally not pass the test of credibility and ability to mobilize the financing and technology to operate the mines.

The two companies now licensed to mine the iron ore deposits are unknowns in the iron ore industry, but succeeded in obtaining very generous provisions in their initial agreements.[31] After initial faltering steps they now seem likely to mobilize the resources needed to commence operations.

This history and background do not augur well for the country to obtain optimal benefits from its iron ore deposits. Accepting that benefits are to be gleaned not only from direct revenues in the form of taxes but also from employment, technology transfer, modern management skills, stimulation of the private sector, possibilities for joint ventures, etc., will all require the adoption of a different approach if different results are to be expected.

[30] None of the majors operate in Sierra Leone, although almost all of them are found in neighbouring Guinea and Liberia.

[31] The President, Dr Ernest Bai Koroma, has since ordered that both agreements be renegotiated, to bring them in line with international practice, and the new Mining Act.

To assess how this can best be done we must return to the value chain of iron ore. Usually the chain is considered primarily in terms of the ‘visible’ activities: mining the ore, washing plants, sinter plants, pig iron or pellets for blast furnaces, shipping and dredging, steel plants (both integrated and mini mills) and trading/marketing (see, for example, Laurens 2007 (available at www.onemine.org)). In addition, there are sublinks attached to the chain that today’s globalized market offers for entry by any *applicant* (sublinks refer to all services that feed into the value addition process). An example is haulage. This is usually subcontracted to a foreign company with a track record or that has done business with the mining company earlier. Government, through the chamber of commerce or the Sierra Leone Investment and Export Promotion Agency (SLIEPA), could put in place measures and incentives for setting up of cooperatives by local transport companies to bid for such contracts. Other cases include IT services, drilling and construction, supply of equipment, maintenance of machinery, etc. The internet now opens up possibilities for even recruitment services to be provided locally or in association with foreign companies.

The same methods should be applied to the ‘invisible’ activities, or back-room operations, such as support services that otherwise would be provided by foreign contractors. An example is international travel of mine operators. It is now estimated that over half of the air passenger traffic consists of personnel of one or more of the over 100 mining companies operating in the country. Travel arrangements tend to be done by the head office of the parent companies. However, a network of local travel agents could bid for and provide a one-stop travel facility to the companies. Similarly, in the case of banking services, currently the practice is to confine local banks to providing services involving transactions in leones. However all local banks have foreign accounts and there is no reason why companies cannot use the local bank for foreign transactions. Thus, the services provided by the parent company and for which management fees are charged, should be carefully scrutinized for elements that can be performed by local agents. In sum, this author believes that the provisions in mining agreements covering procurement must be carefully drafted with the objective of ensuring that as large a proportion of services are provided locally by Sierra Leone-based firms. The exact content will have to be influenced by what options exist and could be developed in the private sector as well as with other minerals. As a matter of principle, the author believes that each third party contract should be analysed for possibilities of increasing local content, either immediately, or, as a minimum, plans should be set in motion for longer-term local supply.[32] Such provisions are only meaningful if national authorities prepare and organize well.[33] Admittedly, not all services or inputs can be provided by local companies now. Nevertheless identification of

[32] This need not be at the expense of efficiency, and can be conceived in terms of partnerships with international suppliers.

[33] It is useless to insert provisions relating to national procurement if services and good cannot be supplied in the quantity and of the quality expected by the mining company.

such opportunities can stimulate local collaboration and support measures for transforming an opportunity to an operational success.[34]

12.7 Monitoring and Implementation

As stated earlier, there is no institutional home for the agreements signed between the government and the mining investors. As a result no single institution monitors the implementation of the full agreement. The first Extractive Industry Transparency International (EITI) report (Adam Smith International 2010) on Sierra Leone noted that reconciling differences on reported tax payments between the records at the National Revenue Authority and the Ministry of Mineral Resources was difficult. Iron ore being the most important resource in the country, this author believes that the monitoring of the implementation of agreements related to its extraction should be assigned to a unit within the President's or Vice President's office. Such a unit would deal with cross-sector and cross-ministerial issues. It could also draw attention to the changing landscape of national and international activities related to the mineral.[35]

The operations of iron ore companies should not be considered merely a matter for the mineral resources ministry, as happened in the past. The repercussions of improperly implemented provisions affect several sectors. Adding to this the imposition of discipline and the need to go beyond narrow mandates of each ministry all points to such a unit being located at the highest level of the leadership rather than at ministerial levels.

The fiscal provisions in agreements deserve special mention. The mining sector employs complex systems of financial management, many of which disguise transfer pricing. Adding the manipulation of debt-to-equity ratios, shareholding, discounted sales, intricate accounting, and interlocking directorates makes ascertaining the full value of financial gains for the country difficult. Notwithstanding the above, there are still those who continue to believe that government must grant overgenerous tax concessions to entice companies to invest. The recent successful renegotiation of a large-scale mining operation confirm that significantly more can be secured for the country, leaving the miner with a normal return on the investment.[36] The National Revenue Authority should set up a dedicated desk for iron ore related payments in order to monitor closely the implementation of the revenue provisions of the agreements.

In general, it is imperative that an iron ore bureau/desk be set up within the Ministry of Mineral Resources, because of the importance of the mineral

[34] For examples, see Battat *et al.* 1996.

[35] Tanzania set up the Tanzanian Mineral Audit Agency in 2007 while Liberia is in the process of establishing one.

[36] It is sad that while the country is labouring under the yoke of higher oil prices some of these 'investors' are already raking in hundreds of millions of dollars in the stock market even before a single ton of ore has been exported.

and its widespread occurrence in the country. The planned National Minerals Agency will take up this task among others, but in the meantime setting up some of the critical units that are needed and that could be incorporated into the agency would be a good start. Desks or bureaus would be manned by local and international personnel and mandated to monitor both performance of the mining companies and the evolution of the industry in order to advise government on issues that are likely to affect either negatively or positively the current and future benefits to the economy. This is a responsibility that would naturally go to the unit that is also responsible for negotiating agreements.

12.8 Revenue Management

Unfortunately, abnormally large inflows of funds into an economy can be accompanied by major challenges. There is a growing body of literature showing the potential negative consequences when such flows are inappropriately managed, as well as some possible ways out for developing countries.[37] Avoiding them requires careful management. Failure to do so results in increased income inequalities, distortions in production patterns, dramatic changes in wage and exchange rates, significant displacement of population, dilution and erosion of democratic values and practices, corruption, and increased vulnerability of the economy to global price shocks.

The important contribution of iron ore exploitation to the development of the country is in the form of the increased revenues that are likely to flow into the budget of the government. The experiences of other countries point to the affliction of what is known as the Dutch disease.[38] There will be strong pressure and temptation to spend the windfall revenues on recurrent items such as wages, or to undertake grandiose projects that are politically attractive; or even to engage in procurement that encourages leakages through corrupt practices. In Sierra Leone such consequences will be disastrous. With weak institutions and poor systems of checks and balances, the results will include enrichment of a few decision makers and their allies, heightened income inequalities, inflation (if the exchange rate appreciates, inflation is unlikely), distortion to the patterns of production, high cost production structures, and the general loss of the country's natural assets. The political and economic consequences have

[37] For a theoretical analysisn see Corden and Neary (1982). A more recent study shows that where there is a dynamic and knowledge intensive natural resource sector the effects of the Dutch disease may be mitigated (see Cavalcanti *et al.* 2011).

[38] When the Dutch discovered large gas deposits in the 1950s, windfall revenues emanated from their exploitation, triggering an appreciation of the currency. In turn this raised the costs of manufacturing and other tradables, adversely affecting that sector of production in the country. For a discussion of the Dutch disease see Corden and Neary (1982).

played out in the cases of the Democratic Republic of the Congo, Central African Republic and others. Sierra Leone must avoid this at all costs. Transparency and information sharing are useful parts of the solution. In addition, a national non-partisan debate on how the resources are to be used, informed by a rigorous analysis of the various options, will be a first step.

There are a variety of approaches to manage the sudden and large inflow of funds into an economy. The creation of sovereign wealth funds with special rules is the most widely used, and has had mixed success (see Heuty and Juan Aristi 2010). No such strategy existed in Sierra Leone in the past. Rather the flows of revenues from iron ore, diamonds and other minerals were paid into the consolidated funds and got 'lost' in the state coffers to be (mis) used as other funds were.

In Sierra Leone, where infrastructure needs are critical and have been shown to be an important 'binding' constraint to development, there is considerable pressure to reconstruct roads, hospitals, offices, etc. At this time, or in the next 2–3 years, the option of ring-fencing the windfall revenues may not be feasible or economically practical. Yet it should not be dismissed outright, particularly as infrastructure development is susceptible to corruption through inappropriate contracting, rent seeking, politically inspired choices all contributing to erosion of the country's fledgling democratic institutions and traditions (see Anne-Claire Poirson 2005; Frankel 2010).

Another option involves setting up an investment fund (sovereign wealth fund) outside the country that would release a steady flow of cash consistent with the level that can be absorbed without major distortions, through exchange rate effects on resource allocations and on production. There are many examples of successful and failed cases of wealth funds. While the Norwegian fund is often cited as a success story, the circumstances of its creation and the environment in which it operates do not make it readily applicable to Sierra Leone. At the same time the Chad fund set up by the World Bank failed to meet expectations, and the reasons can equally be found in present-day Sierra Leone. The Trinidad Heritage and Stabilisation fund could provide some useful lessons. Sierra Leone should attempt this option with caution.

It is argued (Dunning 2008) that one way to avoid some of the negative outcomes associated with the resource curse is to transfer cash directly to citizens (Deverajan and Le 2010). In this case the grants will be treated as income and therefore subject to taxation. Advantages include improved income distribution, direct increase in household incomes, and of course political gains for the ruling government. The downside is the loss of (lump sum payments by mining companies) revenues for infrastructural development. Although direct cash transfers is practiced in some developing countries including post-conflict countries (e.g. Timor Leste), the political and economic environment in a country determines the success or failure of this approach.

Whatever option(s) are selected, Sierra Leoneans must be given an opportunity to discuss and understand the various implications.

12.9 Socio-political Effects

As was the case for the Marampa mines, which transformed an area populated by a few villages to a bustling mining town in the 1930s, so will the current mining operations transform Tonkolili, Port Loko and Bombali areas within the next few years. Migration of unskilled labour to these areas in search of jobs will lead to urbanization and possible loss of agricultural labour in other parts of the north.[39] Food shortages and poorly supplied social services in the opened up areas could turn them to politically tense and socially explosive areas. There is already some evidence of this happening in the recent upheavals in Lunsar (London Mining), and the mining operations of the African Minerals company. It would not be far-fetched to imagine the area becoming the new Kono[40] of the country, within the next five years. Although the country is small and minerals are widely distributed in various parts of the country – petroleum in the south, iron ore in the north and south, rutile in the south, gold in the north-east and south, diamonds in the east – regional tensions due to distribution of wealth from minerals should not be ruled out.

Even more importantly, inappropriate management of the windfalls from the iron ore operations in Sierra Leone will produce negative effects that could alter the country's socio-political landscape. As revenues flow in, there will be big winners, but the majority of the population will gain nothing in the initial phases. Income inequalities will rise, and there will be a rapid increase in income levels in Tonkolili, Port Loko and Bombali – the districts surrounding the mines. The net effect would be positive if the migration is really a movement of the unemployed urban youths to the new areas where jobs are available.

In the long run and depending on the market for iron ore, unless there is accompanying infrastructure development in the form of roads, schools, clinics, water supply, markets, energy supply, etc., combined with alternative livelihoods, the area will be littered with ghost towns 50 years on, as was the case for Pepel and Marampa.

An alarming threat is the possibility of state capture. When only one or two companies dominate the economic landscape of the country, the owners very quickly begin to control and dictate the affairs of state using the power of the purse to secure even more concessions, influence key appointments, manipulate the justice system, compromise the role of the legislature, and finally control the political process. The experience of the past 18 months when the agreements of the two companies with major stakes were adopted by parliament (and, in one case, unanimously after parliament was recalled

[39] This is part of the Dutch disease syndrome, involving movement of labour from certain sectors to others leaving acute shortages and decline in production. In Sierra Leone labour shortages are already taking their toll in the new large farms with absentee owners. Even in the services sector, semi-skilled labour is now moving towards these new areas where higher salaries are available.

[40] Kono is the area where alluvial diamond mining flourished accompanied by a high level of crime. Skirmishes among rival diggers were rampant in the early years.

from recess), is a reminder of the remark of former President Siaka Stevens after a failed coup: 'eternal vigilance is the price we have to pay for our liberty.'[41] Fortunately, both agreements are being revisited upon the instruction of the current President Ernest Bai Koroma. A renegotiation of course never produces outcomes as good as new negotiations. In these cases as the companies make progress in developing the mines; the phenomenon of state capture makes it even more difficult to alter the bad provisions in the initial agreements. Very strong resistance can be expected using 'insiders'. The implementation of the government's policy in this regard will be the first real test of the commitment of the leadership to maintain control of the economy and take a radical departure from the past.

This phenomenon of state capture should not be underestimated. The country must be watchful of coup d'états in different forms. The leadership must indeed be vigilant and empowered to confront these dangers, and civil society must remain objective and continue to alert the citizenry of the lurking menace.

Government participation in the equity of a company is increasingly debated in official circles. It is sometimes argued that the state must 'own' part or all of the company that exploits one of its natural assets, not only to obtain some of the profits generated, but also to ensure that its interests are preserved when decisions with potentially significant repercussions for the economy are taken. Botswana is often cited as a case where the state participates in the decisions of the diamond mining company Debswana, and thus enjoys part of the profits generated by the company, without the former abdicating its regulatory role.

Sierra Leone's experience in this area so far has been disastrous.[42] The acquisition of 51% stake in the diamond mining company in 1970 benefited a private businessman and contributed to the disintegration of the sector (Kargbo 2011). Similarly the ownership of shares in Sierra Rutile has not been of any benefit to the country; on the contrary, this has meant the loss of much needed taxes for the treasury. Inevitably, equity participation gives rise to political interference and clever manipulation of share volumes diluting the government's share. This practice is therefore strongly discouraged, particularly at this time in the country's evolution where weak institutions and capacities prevail against a background of widely reported corruption nurtured by informal networks. The benefits of ownership can be better obtained by inserting specific provisions in the mining agreement targeting the gains sought by free equity participation.

The lessons of Kono (diamonds) and Marampa/Pepel (iron ore) are the most obvious evidence of the consequences of no, or poor, planning before and during the boom years. Proper planning for alternative livelihoods that will be independent of, and complementary to, the mining sector would have produced different results. In the past, alternative livelihoods were conceived

[41] The original quote is attributed to Andrew Jackson's farewell address in 1837.

[42] The picture outside the mining sector is the same; almost all state-owned entities operate at a loss.

as jobs linked to, or supporting, the mining sector rather than being quasi-independent of the mining sector. When the mines close, such jobs inevitably end as well. However less mining-dependent alternative livelihoods would continue even after the closure of the mines. The north of the country is an area with potential for agricultural activities. It is essential, therefore, that alternative livelihoods be designed around agro-industrial production.[43]

12.10 Conclusions

The extraction of iron ore has the potential to transform the country in the next two decades, only if the right policy choices are made now, the right balance is struck between short-term needs and longer-term goals, and if the difficult decisions are taken on the newly assigned licenses. The iron ore industry in Sierra Leone will have to be developed as an integral part of the development of the economy, and not be allowed to become an enclave, as was the case in the past. To achieve this, the mining operations surrounding the exploitation by various investors must be the result of a comprehensive plan, including carefully negotiated agreements, structured organization of local small businesses in order that the country participates as much as possible in the supply and value addition process both now and in the long term.

Accepting the government's objective to secure optimal benefits from the exploitation of iron ore deposits, the preceding sections have revealed some of the shortcomings of past policies in Sierra Leone. In turn these have provided useful pointers to what should be addressed early on, now, as well as what should be avoided.

A clear lesson that emerges is the importance of careful planning and preparation by the national authorities in order to glean the maximum contribution from the mineral resource to long-term sustainable development of the country.

The current desperate economic conditions of the country have been used to justify the dominance of short-term considerations in decision-making, chief of which is the need for immediate revenues.[44] This is shortsighted and puts at risk the greater longer-term goal of optimal gains from the sector. Although the boost to national revenues is important, the optimum gains from iron ore production are to be realized by carefully managing the totality of its contributions to the overall development of the country.

The government has recently launched a major reform of the mining sector. Its success would require correct choices on policy, institutions, and mechanisms – in particular for human resources development – being adopted as part of the development planning process.

[43] The government may also consider allocating a small percentage of revenues from mining to be used specifically for encouraging alternate agro-industrial activities. The diversification of the economy is critical for sustainability but often only receives lip service.

[44] Paradoxically, there is an unexplained readiness to grant overgenerous concessions.

Finally, there should a concerted attempt to avoid doing business as usual. The current systems in place for negotiating agreements and managing revenues are now being revisited for greater efficiency and effectiveness. Public disclosure can be an important instrument for this purpose and for reducing corruption. All agreements, licenses and payments by mining companies should be put in the public domain. Ultimately success requires all stakeholders, particularly those in charge of the minerals sector, to approach their tasks differently, be prepared for bold new measures and not be compromised by grandiose promises by mine operators. The mining sector cannot be left on autopilot; instead it must be driven by, put at the forefront of, and be integrated with, the government's transformation agenda. A start has been made at the level of contract negotiations. Now attention must turn to the management of the contracts, and of the finances flowing from it into the economy.

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