The Energy Sector: Oil, Gas and Electricity

The energy sector has been one of the main sources of growth in the last ten years. Crude oil output nearly quadrupled between 2002 and 2009 with the start of operations at the Baobab deepwater oil field, reaching a maximum of 70,000 barrels per day. With the average price of crude oil also quadrupling over the period, this resulted in a major increase in export earnings and a smaller but significant rise in government revenues. Exports of crude oil increased from US$91 million in 2002 to US$1.1 billion in 2009 (with a peak of US$1.5 billion in 2008). Taxes, dividends and other revenues amounted to 14 percent of total government revenues in 2008, but fell to only 5 percent the following year.

Côte d’Ivoire is also a major producer and exporter of petroleum products. Its refinery (Société Ivorienne de Raffinage, or SIR) is the largest industrial enterprise in the country, and indeed in all of WAEMU. Total sales were estimated at US$2.8 billion in 2010. It is also considered to be one of the best performing oil refineries in sub-Saharan Africa. More than half of its output is exported to neighboring countries, as well as Nigeria and even the United States. Indeed, official trade statistics show a surprising increase in petroleum product exports from 2000 to 2009, due to higher efficiency and productivity gains, even though the capacity of the refinery did not expand. This refinery was built before oil was discovered in Côte d’Ivoire and is designed for the lighter oil available in Nigeria. The value added of petroleum products is therefore limited to that which derives from the refining operation, and the cost of imported oil should be deducted from the value of petroleum product exports to obtain an accurate measure of the net exports generated in this category. Taking crude oil and petroleum products together, net exports amounted to an estimated US$900 million in 2010.

Côte d’Ivoire is one of the few countries in Africa which uses its own natural gas on a significant scale. It produces gas either in association with crude oil or in separate gas fields. Gas production increased when the Baobab oil field began operation, but in more modest proportions. While none of this is exported, it plays a major role in electricity generation and energy supply to the industrial sector. All thermal electricity generating plants now use natural gas, and most major industrial enterprises have converted from oil and diesel to gas. This should be an important advantage for the Ivorian economy as gas-based thermal energy is more efficient, production is normally cheaper and easier to expand as compared to oil-based power generation, as well as being more environmentally friendly. However, this depends on assured supplies of nearby gas as it is very expensive to import other than by pipeline.

Electricity is the other major component of the Ivorian energy sector. The country has traditionally been a significant exporter of electricity to Ghana, Burkina Faso, Togo and Benin. Originally this was based primarily on hydroelectric capacity, but thermal power has played an increasing role since the mid 90’s and now accounts for over half of capacity and two-thirds of actual production. Electricity exports reached roughly US$100 million in 2002 but have since declined to US$32 million in 2009, due to expanding domestic demand and lack of investment in maintenance or new capacity. Indeed, in early 2010 the country suffered rolling blackouts for the first time in its history, requiring the government to rent expensive diesel-powered industrial generators. This was one of the main reasons for the drop in estimated GDP growth in 2010 to 3.0 percent, from 3.8 percent the previous year.
Potential and Problems

All components of the energy sector have potential for growth which could be a major driver of the national economy in the coming years. The crude oil and natural gas sectors are particularly promising in light of the recent discovery and exploitation of oil fields in Ghanaian territorial waters adjacent to those of Côte d’Ivoire, which are much larger than any of the existing Ivorian fields. There have also been recent finds in Sierra Leone and promising new leads from Liberia, on the other side of Côte d’Ivoire. Given the lack of extensive exploration in Ivorian waters, especially in deep waters beyond the continental shelf, it seems highly likely that more oil and gas can be found. Furthermore, the presence of exploration companies in the sub-region should help attract them to Côte d’Ivoire, since it reduces the cost of mobilizing expensive ships and personnel. With more gas, the production of thermal electricity could expand relatively easily. Coupled with new hydroelectric options, Côte d’Ivoire should be able to recover its role as a major electricity exporter. The Ministry of Mines and Energy is planning on an increase in the value of such exports to US$150 million by 2015. The potential for growth in refining may be more limited but not out of the question, given the qualities of SIR’s installed capacity and ancillary infrastructure and the likely strength of regional demand.

However, the oil and gas sub-sectors face serious challenges which require urgent attention. Exploration has been neglected and existing reserves are running out. At current rates of extraction, gas reserves will only last for another five years, and oil reserves for six. Yet deep water exploration, which holds the most promise, can take 5-10 years to begin commercial production, especially for gas fields, since their development requires additional infrastructure for its processing and transmission. At the same time, the alternative of importing Liquified Natural Gas is very expensive, imposing additional costs on all domestic users, with corresponding implications for competitiveness, including but not limited to that of electricity exports.

SIR remains viable but vulnerable. Its financial situation has been constrained by the government’s reluctance to allow adjustments in petroleum product prices in keeping with rising costs, as well as payment of its arrears by the state. It is also one of those enterprises dependent on gas for its own power source. However, its most immediate problem is the competition it faces in the regional market. Larger overseas refineries have surplus capacity and they have been cutting their prices, to gain market share for petroleum products in West Africa. In addition, it is likely that investments will be made to upgrade refineries in Ghana and Nigeria, which would both have the advantage of locally-sourced oil.

The biggest challenges lie in the electricity sub-sector. This sub-sector has suffered from years of neglect. The political situation has discouraged new investors, while existing private operators and the government have lacked resources to maintain the current infrastructure. This is due to a combination of factors, including the high cost of gas resulting from unfavorable contracts with private gas producers, the low electricity tariffs charged to residential consumers and businesses, the obligation to serve the entire country (rebels?-held areas) even though bill collection was not possible in the North, whilst illegal connections and inefficiency were growing including in Abidjan. Technical and commercial losses have reached 24 percent of revenues whereas the industry norm is less than 5 percent. The sub-sector faces growing
deficits which are becoming a major burden for the national budget. In 2010, government subsidies were estimated to exceed US$200 million. Without urgent attention, exports will dry up, and domestic industry will suffer major power shortages, leading to producing its own electricity at much higher costs, including to end consumers.

Moving Forward

Côrte d’Ivoire should be an attractive target for foreign investors in oil and gas, given the established track record of production, the amount of territory still unexplored, the local market for gas, and a credible local partner in PETROCI, the national oil company and a reliable refinery for crude processing. As soon as the political crisis of 2011 has passed, the authorities will need to actively promote new exploration, with a particular focus on the major oil companies who are generally the best placed to develop deep water reserves. But they will also need to strengthen the institutional framework to clarify roles and responsibilities, promote growth, ensure that the state captures a fair share of the rents, improve transparency and protect the environment.

The first steps will be the approval of a revised Hydrocarbons Law, the preparation of a new model for production-sharing contracts, and a performance contract for PETROCI. This work was well-advanced in 2010 but stalled with the political crisis. A key goal would be to stimulate more proactivity on the part of PETROCI, which would have greater clarity in its objectives, and an incentive system more closely linked to their achievement. At the same time, the Ministry of Mines and Energy would acquire stronger regulatory powers. Both institutions would also require capacity building to improve their effectiveness, notably in monitoring the operations of foreign oil companies. For example, it will be important for PETROCI to better understand the costs of oil production in order to better protect its interests and those of the state. Its share of total oil output, which it markets on behalf of the state, is currently determined as a residual, after all costs, often unaudited are deducted by the oil companies. Similarly, the Ministry will need better tools to assess and forecast both future hydrocarbon prospects as well as financial results. Foreign oil companies should be obliged to contribute to building the human resource capacity in PETROCI, as they are for the Ghana National Petroleum Corporation. To date, this has not been required in Côrte d’Ivoire.

Particular attention must be paid to the revenue-sharing formula adopted. As relatively few jobs are created directly by the oil and gas industry, its main contribution comes through the provision of government revenues. Yet the risks to private investors are not negligible, and the country urgently needs their capital and technical expertise. The oil companies also have much better information and expertise. The government has already learned the cost of poorly designed contracts in the gas sector, where the state agreed to buy gas at an unprotected price linked to the international price of oil. At the same time, it had guaranteed a supply of gas at different prices to private operators of thermal stations in order to promote their investment. With the rapid rise in the price of oil, the state found itself in the position of having to either increase electricity tariffs or subsidize electricity production. Thus a natural resource which should be generating rents has instead required subsidies. The government will need to bring in expert advice to ensure that new oil and gas contracts are properly structured to share the risks and rewards.

1 The French company, Total, signed an agreement for oil exploration in October 2010, just before the crisis erupted.
High public revenues must be matched by effective transparency if society as a whole is to benefit. Unfortunately, the examples of misuse of resource rents are legendary and have led to concern for the so-called “resource curse”. Many developed countries have drawn huge benefits from rich resources (e.g. Norway, Canada), as have some developing countries (notably Chile and Botswana). However, where institutions and governance are weak, the record has more often been negative. Paul Collier has concluded that “the resource curse is confined to countries with weak governance. In light of Côte d’Ivoire’s record over the last ten years, one can legitimately ask what the prospects are for effective use of natural resource rents. It is therefore essential that the initial steps taken to adhere to the Extractive Industry Transparency Initiative (EITI) be pursued so that all stakeholders can be assured that the taxes, dividends and other payments by the private sector are properly accounted for in the national budget. In addition, however, accountability in the execution of that budget will have to be strengthened through such measures as on-going quarterly execution reports, timely and published audits by the Chamber of Accounts, and effective Parliamentary oversight.

The country will also need to seek alternative sources of gas supply. Given the dependence of the industrial and electricity sectors on natural gas, the country must prepare for the possibility that new local gas reserves may not materialize in time to replace existing supplies. Fortunately Ghana has now become a gas producer and there is the prospect of extending the West Africa Gas Pipeline from Ghana. Since Ghana has long-term gas purchase contracts with Nigeria, it actually has surplus gas of its own for sale. Access to the WAGP would open up the possibility of buying gas from Nigeria or Ghana, giving Côte d’Ivoire more bargaining power vis-à-vis these two suppliers but also with regard to its own domestic private gas producers.

An audit and subsequent strategy already lay out the necessary steps for SIR. The company will need to optimize its production capacity to match demand, satisfy increasing environmental standards, economize on energy consumption and keep improving productivity. It will need to increase its “hydrocracking” capacity in order to maximize the production of gasoline, diesel and kerosene which are in- and bound for high demand, as opposed to heavy fuels. Desulfurization equipment will be required if it is to meet new international norms for sulfur content. This will be essential to protect its exports to the USA and will soon be important for the sub-regional market as well. Other investments will be needed in its subsidiary, the Multinational Bitumen Company, in order to expand asphalt output and produce low sulfur heavy fuels, for maritime shipping needs.

The necessary investments have been estimated at US1.0 billion over ten years. Some of this can be financed internally, with the help of further increases in efficiency, including reductions in staffing through retirements. Clearing the remaining arrears owed to SIR by the government would also help. However, it may also be necessary to increase the tax on petroleum products. The pricing formula for petroleum products has traditionally included a k coefficient to generate revenues for investment in the refinery, and this has been steadily reduced over the last 15 years. It may be time for a temporary increase to permit the necessary modernization of SIR. However, the state will also have to ensure that the pricing mechanism is honored so that higher costs can be smoothly passed on to better informed consumers and businesses. This will

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2 Paul Collier, The Plundered Planet, p. 46.
require a regular education and communication campaign to overcome resistance, which is otherwise politically charged.

**A 2009 audit outlined the key elements of a strategy to rescue the electricity sub-sector.** Clearly, substantial investment is urgently needed by both the government and private sector partners to fix the existing infrastructure and expand capacity. Some short-term remedies are available, such as the use of steam from existing thermal plants applying combined cycle technology to generate additional power without increasing the demand for natural gas. Investors including IFC were prepared to invest in one such operation in 2010 but were hesitating due to the weak overall financial situation of the sub-sector, combined with the unstable political context. Recent institutional rationalization should also help. The former electricity distribution company, EECI, has finally been dissolved and its assets formally transferred to the state’s asset-holding company, SOGEPE (Société de Gestion du Patrimoine du Secteur de l’Electricité). This should enable the latter to raise financing but it will need to launch an aggressive campaign.

**The institutional and regulatory framework needs further modification to share risks and promote efficiency.** The current structure was designed to attract private investors by minimizing the risks they faced, and in that it has succeeded. The state guarantees a stable supply of gas for private thermal electricity producers by buying all gas from the private gas operators at attractive prices. It then purchases all electricity for resale to the private distribution company, CIE (Compagnie Ivoirienne d’Electricité). However, this has forced the state to bear most risks, while removing incentives for the private sector to improve productivity and reduce costs. Unfortunately the crisis of 2011 has created new and extraordinary risks for the private sector which will make it difficult for the state to argue for a renegotiation of the regulatory framework in the short term, but this can be embedded in future contracts.

**There is also a problem of lack of competition and transparency within the private sector.** There are a very limited number of private operators, and they are typically vertically integrated in two or more stages of the value chain (gas production, electricity generation, electricity distribution) including the management of financial flows. This has constrained competition while making it difficult for the state to get a clear picture of costs. While little can be done in the short term about the composition of private investors, an effort should be made to attract different partners for new investments in natural gas fields and thermal power plants. Furthermore, the national regulatory authority (ANARE, Autorité Nationale de Régulation du Secteur de l’Electricité) which has existed on paper since 1994 must finally be made operational, independent and powerful, but this will require significant capacity-building along with a more aggressive take-over and execution of its regulatory Mission.

**Once the political crisis has been resolved, the government will need to reverse the financial hemorrhaging in the sector.** This will be essential for the health of the national budget as well as to attract private investors. Investment and different private sector incentives will help. But the state will have to renegotiate the price at which it purchases natural gas from the gas operators, to delink it from the rising price of oil, or in the least, to equitably bench-mark it. It will also have to come to grips with the necessity of increasing electricity tariffs. A new price-setting mechanism will need to be established and implemented by ANARE. Here too an active
and on-going educational campaign will be needed to convince consumers and businesses that short-term increases are necessary while longer-term measures are being adopted.

In the medium to long-term, renewable energy sources should be developed. There is still ample potential for hydroelectricity. In fact, some ten sites exist which together have a generating potential (1300 MW) slightly greater than the entire hydro and thermal capacity in the country today (1210 MW). The top priority is the Soubré site (290 MW). Solar power should also be developed beyond the few pilot projects currently in operation, especially for rural areas. The development of cashew nut processing could also contribute to rural electrification through the use of the shells as biomass. Several sites for wind power have been identified which would warrant pilot projects, to be included in a realistic vision and long term strategy that the energy sector will require in the future.

Overall, the Ivoirian oil gas and electricity sector still offers huge unrealized potential, in resource development, demand-side management as well domestic or regional growth. A well thought and structured, post-crisis, “Energy Master Plan” would help the country move forward with a clear vision of its economic future, combined with a strong appeal for private sector investments. This is the final objective of the Policy Note and the new government should have it as a priority item on its economic agenda.