



## Oil Field Services Expenditure and Economic Growth: Prospects for Developing Countries

Governments in oil-exporting developing countries find the task of transforming oil revenues into productive and sustainable economic growth a significant challenge. At the same time, the other key contributor of this sector to the domestic economy - the market for oil and gas field services expenditure - continues to expand. This paper provides an overview of the procurement market in oil and gas exploration and production (E&P), and asks if sufficient effort is being made to realise its potential to grow the domestic economies of developing countries.

### Growth in oil-exporting countries

In the last four years, the growth statistics of several low-income and low-to-middle income economies have been buoyed by exports of oil and natural gas. For example, GDP growth in the oil-exporting countries of sub-Saharan Africa has outstripped that of their immediate neighbours. The GDP of oil exporters grew by an average of 8%, compared to just under 6% for oil importers<sup>1</sup> (excluding Nigeria, which has recently lost production volume due to social unrest). Sub-Saharan Africa is one of the few regions to have increased production in response to higher oil prices, raising outputs by 14.3% in 2004, 7.6% in 2005 and 8.1% in 2006.

In 2006, the total global sale of oil and natural gas on the wholesale markets generated revenues of US\$3.3 trillion dollars.<sup>2</sup> Of this, production from low-income and low-to-middle income economies accounted for US\$743 billion – 22.7%. The figure falls to US\$506 billion if the largest producers in the category – China and Iran – are omitted. For many such economies, sales of oil and gas form a substantial portion of GDP<sup>3</sup> (see Figure 1). Oil and gas sales currently contribute more than 20% of GDP in 14 of these countries.

Figure 1: Sales of oil and natural gas on wholesale markets as a % of GDP (nominal) in low and low-middle income countries, 2006



Whether sales of oil and gas continue to account for such a high proportion of GDP and contribute to further growth will depend on:

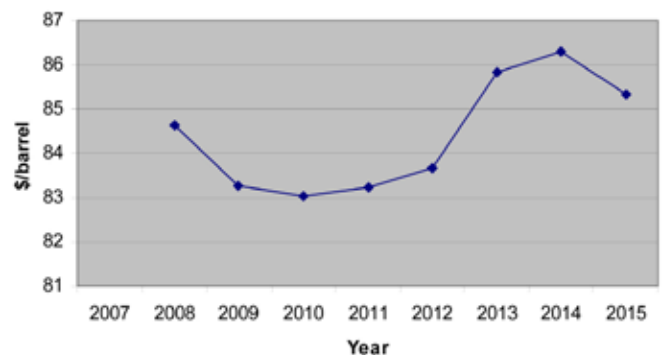
- ➔ Sustained high commodity prices in the medium-term;
- ➔ Domestic and foreign companies continuing to invest in the sector; and

- ➔ Governments successfully transforming the economic outputs of the sector (procurement expenditure, royalty payments, share of production sales, profit tax etc.) into sustainable, productive, economic growth.

Despite recent turbulence in the stock markets, long-term futures for the spot price of oil indicate price levelling off at around the mid-US\$80 per barrel mark (see Figure 2).

With such optimistic prospects on price, oil companies are likely to continue to invest in exploration and development. A recent survey by Lehman Brothers of 344 independent and national oil and gas companies suggests that companies would cut their expenditure only if prices fall below an average of US\$50/barrel.<sup>4</sup>

Figure 2: Closing futures price quotes for NYMEX light crude oil – December 2008



On the question of what governments can do to transform the economic outputs of this sector into sustainable growth, clearly in strict dollar terms the potential is higher for oil revenues than for procurement expenditure on services (drilling, design, fabrication, operations, etc). For example, in 2006, outside of North America, expenditure in the oil services sector was US\$190 million: a figure that represents 8.3% of gross oil and natural gas sales in the same year.

Oil and gas companies would cut their expenditure only if prices fall below an average of US\$50/barrel

Such a low ratio is, however, potentially misleading. As oil exploration and development expenditures rise in real terms, and oil and gas wholesale prices stabilise, this ratio will narrow. Furthermore, many developing country oil-exporters suffer from weak public financial systems, with mismanagement and corruption a significant challenge. This reduces the availability of revenues for productive investments in the economy.

To illustrate, 22 of the world's 24 low and low-middle income oil-exporting economies fall below the 50 percentile in the World Bank's governance indicators database on corruption.<sup>5</sup>

Beyond the loss of revenues through corruption and mismanagement, only a portion of total government residual rents from oil will find their way into near-term productive investments. Significant portions are likely to be re-invested back in the industry through 'calls' on capital by state-owned oil companies. Revenues may also be allocated to service national debt, support recurrent spending on welfare payments, civil service salaries, etc, or be invested in the health and education sector, which although productive in the long-term carry lead-times that delay their economic benefits.

Given limitations to the role of the state in transforming oil revenues into growth, it seems right to ask the question: which is economically more efficient, a dollar spent by an oil company to procure services in the local economy, or a dollar passed through the public financial management system?

Taking into account corruption, mismanagement, debt servicing, and recurrent and social spending, only a portion of Government oil revenue receipts find their way into near-term productive public investments

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## Prospects for oil and gas services expenditure

Box 1 lists the principal services procured by oil and gas exploration and development companies. Lehman Brothers anticipates an average 11% increase in expenditure on these services in 2008, taking the value of the market worldwide to US\$369 billion. This follows a trend that has seen the market rise five fold from its level of US\$74 billion<sup>6</sup> in 2000.

Excluding expenditure by companies in North America, global expenditure in 2008 is expected to rise by 16%, taking this market segment to US\$267 billion. This segment has now grown for 11 consecutive years, with the "powerful long upcycle....expected to be ongoing for several years".<sup>8</sup> Much of the growth has been by state-owned and international oil companies operating in Africa, the Middle East, and Russia.

From the perspective of individual companies, those anticipating the largest annual increase in expenditure budgets for 2008 include<sup>9</sup> the BG Group (a 40% global increase, equivalent to \$1.2 billion additional expenditure over 2007 levels), Chevron Inc (19%, a \$2.0billion increase), Nigerian National Petroleum Corp (NNPC) (34% and \$1.2billion), and the Angolan state-owned company Sonangol (32% and US\$2.3 billion).

In Nigeria, one estimate puts cumulative investments by NNPC and its joint-venture partners between 2006 and 2009 at US\$60 billion, a little over US\$10 billion per year.<sup>10</sup> This is equivalent to about two-thirds of the total annual capital expenditure budget of the Government of Nigeria for 2007 (at \$15.7 billion)<sup>11</sup>. Supporting these projections, NNPC are budgeting US\$4.7

### Box 1: Types of oil and gas exploration and development expenditure<sup>7</sup>

**Exploration Services**, including geological evaluation; 2D, 3D, 4D seismic data acquisition, processing and interpretation; soil investigation and oceanographic services; chart and map production; directional survey services; drilling rigs; exploratory drilling; well testing; and field development planning.

**Front End Engineering Design (FEED) Services**, including design of on-shore; shallow or deep off-shore facilities; transportation and evacuation pipelines; and liquefied natural gas (LNG) and gas gathering facilities.

**Fabrication and Construction**, including terminals; drilling modules; piles; anchors; bouys; platform 'jackets'; platform 'topsides'; bridges; gas flare booms; storage tanks; pressure vessels; platform accommodation modules; subsea systems; pipeline systems; flowlines and risers; installation; hookup; and commissioning services.

**Materials Procurement**, including steep plates; flat sheets; steel pipes; electricity cables; valves; cement; heat exchangers; steel rope; protective paints; and glass,

**Well and Drilling Services**, including reservoir services; drilling rigs and related services; well completion; wire lie services; logging/measuring while drilling; production drilling services; directional survey services; wellhead services; cutting injections/disposals; well watch services; pumping services; and well-crisis management.

**Transportation and Disposal Services**, including tugs; remotely operated vehicles; diving support vessels; barges; accommodation vessels; waste transportation services; crane rentals; special vehicle rentals; logistics management; and supply base/warehouse/storage services.

#### Other Services

- ⇒ Health, safety and environment, including pollution control, waste disposal, safety protection, equipment brokerage, camp services, catering services, facilities management;
- ⇒ Communications and information systems and services;
- ⇒ Marine operations and logistical services, including floating storage units (FSU);
- ⇒ Finance and insurance, including banking, credit granting, accounting, insurance broking;
- ⇒ Inspection, testing and certification;
- ⇒ Project management and consulting services, including construction management, quality assurance, SHE consulting, legal consulting, advertising, technical consulting; and
- ⇒ Maintenance services, including: equipment maintenance, dredging, and sub-sea and pipeline systems maintenance.

billion for expenditure in 2008 alone.<sup>12</sup> In Angola, Sonangol anticipate spending of US\$9.3 billion in the same year.

Looking at expenditure on exploration services alone (not production), the volumes of anticipated spending remain impressive. Tullow plc is a small Ireland-based oil company, with total revenues just 8% that of the UK's BP plc. This company plans to spend US\$800 million on exploration in 2008; 75% of this will be spent in Africa, mostly on operations in Uganda and Ghana.<sup>13</sup>

**In Nigeria, annual procurement expenditure by the national oil company and its joint-venture partners is currently equivalent to about two thirds of the Government's total annual capital expenditure budget**

High levels of exploration and development expenditure are also reflected in the revenues of the major oil services and drilling companies. For example the operating revenue of Schlumberger – the world's largest oilfield services company with a market capitalisation of US\$123 billion – gained 24.6% in 2005 and 34.4% in 2006.<sup>14</sup> Schlumberger's operating profit is estimated to rise 19% in 2008.<sup>15</sup>

**The operating profit of Schlumberger – the world's largest oilfield services company – is expected to rise by 19% in 2008**

## Characteristics of expenditure

The expenditure costs of oil companies vary with field location, technology and company. To illustrate where the higher expenditures lie, Table 1 weighs different components of expenditure for one typical deepwater off-shore asset development project. Here the principal item is platform construction (design, materials, fabrication and assembly), followed by drilling and pipeline and subsea services.

Different oil fields have different characteristics, and thus ultimately affect the cost of producing oil or gas. For example the capital costs of producing oil from the Girassol field in Angola equates to around US\$4/barrel, with operational costs at US\$3/barrel.<sup>17</sup>

This contrasts with US\$6/barrel and US\$9/barrel, respectively, for production from the Orinoco region in Venezuela.

Average overall costs are also rising. High oil prices are having the effect of extending the shelf-life of fields that otherwise would have become uneconomic. This is pushing up operating and maintenance costs, and thus related expenditure. The same high oil prices are also making what were once uneconomic discoveries viable, with the same upwards effect on costs.

The structure of the services industry is possibly a further source of inflationary pressure. The oil and gas exploration and services sector is dominated by a handful of major engineering companies. The ten largest such firms are estimated to account for 55% of total worldwide oilfield services.<sup>18</sup> The three largest firms – Schlumberger, Halliburton and Baker Hughes – have a near monopoly over certain critical services: 89% of the market for pressure pumping, 87% for directional drilling and 56% of FPSO vessels.<sup>19</sup> An important element of their services, and one under considerable inflationary pressure, is the hire of drilling rigs. The supply of rigs is set to grow 10% per year for the next two years, a figure well below demand and leading to day rig rates that have more than doubled in the last few years.<sup>20</sup> Current rigs world wide total around 2,500.

## Domestic capture of procurement expenditure

Although multi-national engineering firms dominate, and the sector is highly technical and characterised by global sourcing, in economically challenged countries it is still possible for certain manpower and supplier services to be provided through the local economy. The level of domestic capture of expenditure depends on the available skills, the technological capabilities of national supplier firms, the affordability of finance and the appropriateness of the regulatory environment. It also depends on the willingness of oil companies and their lead services contractors to assume the commercial risks involved in contracting firms that may not be internationally competitive.

The literature on 'local content' suggests a range of figures for the current capture of economic benefits from oil field services expenditure in low-income and low-to-middle income economies. Estimates range from 20% capture<sup>21</sup> for Nigeria, to 3% for Timor Leste.<sup>22</sup>

Different types of expenditure are more likely to be captured by national suppliers and workers than others. An indication of where the opportunities lie is given in Table 1. In this typical deepwater offshore field development, the proportion of domestic capture of expenditure is anticipated at 14.7%. These data show the importance of construction activities, in this case the fabrication of off-shore platforms. This activity alone is expected to contribute 74.1% of the total local content capture from expenditure, a figure predicated on the presence of an internationally-competitive fabrication facility.

**Table 1: Illustrative cost weightings for services to develop a deepwater off-shore field<sup>16</sup>**

Service Activity	Total Cost Weightings	Local Content Weightings
Drilling	21.6%	10.3%
Minor contracts and services	2.9%	6.1%
Platform construction	52.3%	74.1%
Construction all risk insurance	2.3%	0.9%
Pipelines and subsea	20.4%	5.1%
Administration overheads	0.5%	3.5%
	100.0%	100.0%

## Conclusions

Into 2008 and beyond, GDP growth in many low-income and low-to-middle income oil exporters will continue to be heavily dependent upon the sale of oil and gas. The same is true for government revenues. And yet governments are also keenly aware of the potential vulnerabilities of their current good fortune. Transforming oil revenues into diversified, sustainable, economic growth is fraught with challenges. Corruption, financial mismanagement, consumptive recurrent spending, all combine to reduce the room for governments to invest oil revenues directly in strengthening the productive economy.

**Ministries of Finance and Economic Planning are looking for new ways to derive more immediate and far-reaching economic benefits from the oil and gas exploration and development sector**

Ministries of Finance and Economic Planning are looking for new ways to derive more immediate and far-reaching economic benefits from the oil and gas exploration and development industry. One option is to invest in downstream energy industries: such as refining, power, and fertiliser production. A key constraint of this policy in low-income economies is that of limited domestic demand. The policy can also be slow to demonstrate benefits to the wider economy. Further, if the petroleum inputs to these facilities are subsidised, the policy may fail to grow an economy that is internationally competitive.

Until comparatively recently, governments have paid only cursory attention to the potential stimulus to the economy of expenditure by oil companies. However, with high oil wholesale prices continuing well above US\$60/barrel it seems likely that expenditure in this sub-sector will continue to grow, and with it the interest of governments.

Yet many questions remain. How might governments and companies identify where the best opportunities for domestic capture of economic value from oil field services expenditure lie? What strategies could be deployed to elevate the level of capture from their present disappointing levels? Which fiscal and contractual incentives introduced by governments would leverage the optimal response from companies and their lead contractors?

These questions have been addressed in part in earlier Briefing Notes in this series.<sup>23</sup> The purpose of this paper has been to offer some quantification on the scale of what seems a very real economic opportunity for a significant number of developing countries.

## Endnotes

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