Exploration & Production Activities and Markets

2005 was an outstanding year for the upstream service and supply sector, with E&P investment and key markets reaching record highs. This trend should continue in 2006.
The biggest challenges facing the sector are the tight supply of equipment and raw materials (especially steel), the competition from Chinese companies and the shortage of qualified personnel.

World capital expenditure in exploration-production

In 2005, world investment in exploration and production (E&P) was up 25% over 2004 to $214 billion, resulting from the continued upward trend in crude prices. However, part of this increase was absorbed by the rise in service and equipment costs and does not fully translate into growth for the E&P sector.

Let us stress that E&P investment was up mostly in areas offering easy access, where there are no entry barriers. The combined share of North America and the North Sea in world E&P investment rose from 45 to 48% between 2005 and 2006.

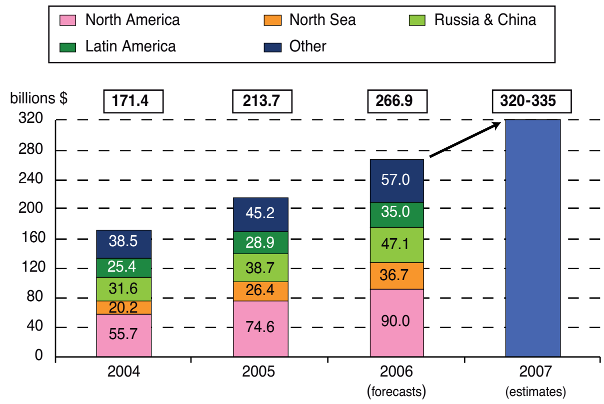
North America, highly responsive to variations in the price of crude oil and gas, stepped up the pace of its investments in 2005, which rose 34% to $75 billion. Canada posted the largest gain (+40%). In the United States, a 31% increase was mainly due to onshore activity and to an upswing in the gas price (yearly average: USD8.58 /MMbtu).

After posting the largest increase in E&P spending of 2004, **Latin America** experienced slower growth in 2005 (+14%). Private-sector investors showed prudence in light of the nationalistic policies implemented by Venezuela, Bolivia, Ecuador and, to a lesser extent, Peru. In Mexico, E&P activity slowed significantly in 2005 during the period of the presidential election. However, countries like Brazil, Argentina and Colombia continued to attract foreign investors.

In the North Sea, capital expenditure pursued an uptrend that first started in 2000, increasing by nearly 30% in 2005, to $26 billion. Even so, oil production in Norway and the United Kingdom is declining.

In 2005, investment climbed 25% in **China** and 19% in **Russia**. Companies like TNK-BP, Rosneft, Sibneft and Yukos each boosted E&P spending by nearly 30%.

Fig. 1 World E&P investment



N.B.: Oil majors have other expenses besides E&P. One must add operating costs, especially those relative to facility maintenance and repairs (a share of this spending represents a large market for certain companies in the related service and supply sector).

Source: IFP. *IFP/Economics Studies Division/2006*

In the rest of the world, Asian countries other than China reported an increase of 17% in 2005 while Africa and the Middle East posted one of 14%.

In 2006, as the barrel of crude hit a new high (averaging $67.5 for the first nine months of the year, compared to $54.4 in 2005), E&P capex continued to grow and is expected to reach $267 billion (+25%). Like in 2005, part of the increase is due to the higher cost of equipment and services.

In North America, investment is expected to be up by nearly 21%. In the United States, some projects that had been scheduled for year-end 2005 were postponed until 2006: following Hurricane Katrina, equipment was damaged and the region had to be restored to normal progressively. Looking to the future, we should stress that the House of Representatives lifted offshore drilling restrictions after a 25-year moratorium. This affects nearly all of the territorial waters off the Atlantic and Pacific coasts. In Canada, the progression of E&P spending is not expected to exceed 9%, because some companies revised their forecasts downwards for 2006 compared to 2005.

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In the North Sea, especially in Norway and the United Kingdom, investments continued to grow in 2006. This increase is expected to reach 39% for a total of $35 billion. In 2006, regional drilling has picked up in a comeback from successive decreases since 2001; drill-rig rental rates are hitting new highs. Currently, the major development operations are taking place in the gas sector.

In **Latin America**, which reported a moderate gain in 2005, spending should accelerate in 2006 (+21%) to $35 billion. Petrobras and Repsol-YPF forecast that their E&P capex budgets will be up by 41% and 20%, respectively. PDVSA and Pemex anticipate more modest increases (lower than 10%).

In **Russia**, investment should rise in step with the world average, because it is a priority for the Russian government to exceed 10 MMbbld.

Finally, **China** expects a spending increase of 22%, slightly below the world average.

In 2007, growth should continue. Shortages of technical resources in the supply and services sector are expected to persist, with no slackening in demand before 2008. Several factors—the investment projects of producing countries and international companies, the increasing probability of price stabilization and recent decreases in gas prices—lead us to believe that E&P capital expenditure will **grow by 20 to 25% in 2007 to $320 to 335 billion.**

The percentage attributed to exploration

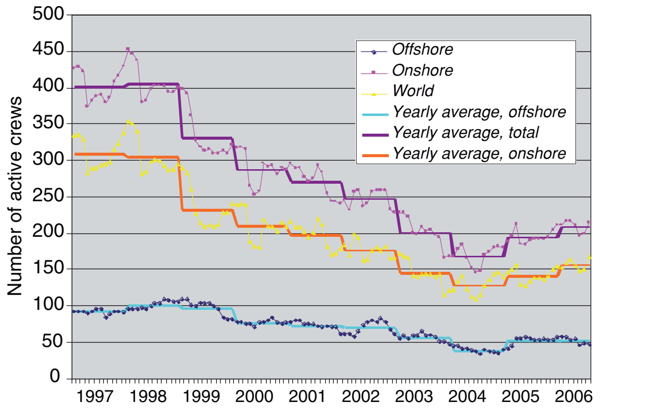
According to the figures published by *majors*, exploration accounts for about 10 to 15% of their E&P investment: subcontractors working for service and supply companies account for 8 to 10 points while internal expense items (surveys, etc.) or other items (e.g. bonuses when exploration permits are obtained) account for 2 to 5 points. In recent years, exploration activity has benefited from favorable business conditions and rallied: since 2002, the number of exploration wells drilled has gone up by 16% onshore and by 4.5% offshore. The sales of services and supply companies in exploration soared 60% from 2002 to 2005.

Seismic

World-wide activity (number of active crews)

2004 marked the end of a long downtrend in seismic activity that started in 1999. Activity was up 16% in 2005. All geographic areas except the Middle East reported a substantial gain; the highest numbers were recorded in Europe (22%) and Latin America (39%).

Fig. 2 Onshore and offshore seismic activity, in numbers of teams (not including CIS countries and China)



Source: World Geophysical News IFP/Economics Studies Division/2006

In 2005, offshore activity grew faster (34%) than onshore (10%). Offshore seismic crews represented 25% of all active crews. For the first half-year of 2006, activity was up 9% worldwide compared to the same period of 2005, mostly due to the 11% spurt in onshore activity. Offshore activity remained stable in early 2006.

These figures do not include China or the CIS countries. In the latter, the number of active crews represented one-tenth of the known total outside the CIS and China. In China, local contractors have about one hundred onshore crews at their disposal, but it is hard to find out how active they are.

The market

The seismic market was worth an estimated $6.7 billion in 2005, up 26% over 2004. Judging by figures published by market players for the first half-year of 2006, the market should exceed $**9 billion in 2006, up 40% over 2005. For 2007, growth for 2007 can be expected to reach 20%, judging by new orders.**

• *Data acquisition and processing*

In 2005, this market totaled $5.8 billion, up 27% over 2004. Growth continued in 2006 (+40%). After years marked by overcapacity and underutilized teams, it was striking to note that, in 2005, **the market for acquisition resources was saturated**, with certain utilization rates surpassing 90%. This triggered a sharp rise in the price of seismic services: they increased by 10% in 2005, by more than 30% in 2006 and by more than 50% for surveys requiring sophisticated equipment (e.g. offshore 4D seismic). To relieve offshore acquisition shortages, contractors have invested in new vessels that are expected to reach the market in 2007 and 2008.

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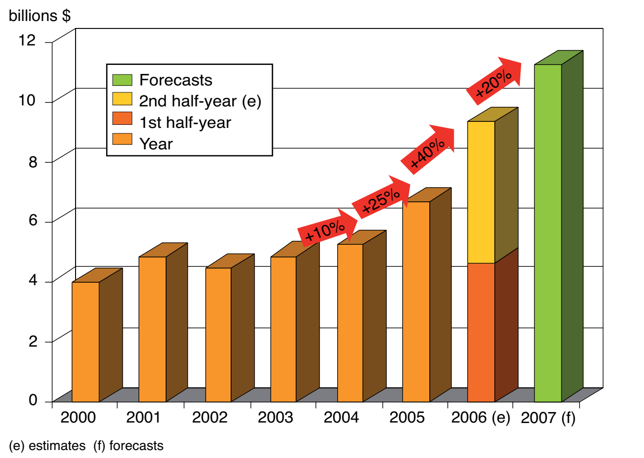
Fig. 3 Trends on the seismic market



Source: IFP. IFP/Economics Studies Division/2006

• *Equipment*

The high level of activity in the service sector also benefited the equipment sector. Sales, which had climbed more than 50% in 2004, continued to rise in 2005 (+22%) and are forecast to do the same in 2006 (+37%). In 2005, the equipment market was worth $870 million and represented 13% of the seismic market, like it did in 2004. It continued to reap the benefit of sustained demand for new-generation systems of seismic data acquisition.

• *Key market players*

In 2005, six companies accounted for three-quarters of the world seismic market: WesternGeco led with 27%, in front of CGG (15%), PGS (12%), Veritas DGC (11%), BGP (7%) and Fugro (4%). In the equipment sector, three companies predominated: CGG-Sercel led with market share of 54%, followed by Input Output and Oyo Geospace with 28% and 8%, respectively.

One major transaction took place in 2006: the **French company CGG succeeded in its friendly takeover bid worth 2.4 billion euros for the American company Veritas**, which put CGG-Veritas on an equal footing with Western Geco. The new entity will have 20 data acquisition vessels, the world's largest fleet, at its disposal. With Sercel, it will also lead the equipment market. Schlumberger bought a 30% interest in Western Geco from Baker Hughes, and the Danish company Odegaard, specialized in seismic inversion.

2006 saw the continued build-up of the Chinese company BGP, which is reputed for its aggressive price policy and whose clientele includes majors like Shell, Exxon and BP. BGP, which works mostly in the onshore sector, announced its diversification into marine data acquisition. It has purchased two trawlers and converted them to data acquisition vessels, as well as ocean bottom cables.

Drilling

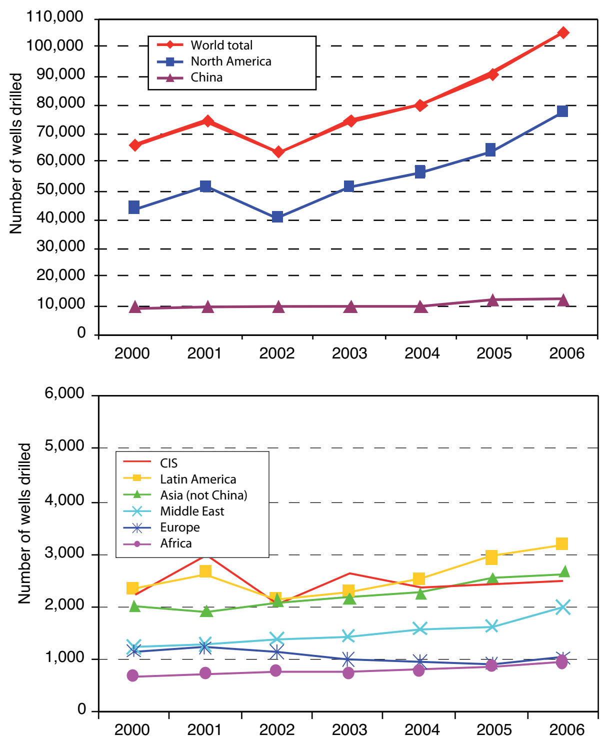
World activity

The number of wells drilled worldwide totaled 91,126* in 2005, up 14% over 2004. This figure should grow **15% in 2006 over 2005**.

The increase in the number of wells drilled came to 14% onshore and 10% offshore in 2005 and is expected to reach 16% onshore and 12% offshore in 2006. As usual, onshore activity represented more than 95% of wells drilled worldwide, mostly concentrated in North America and China. Offshore activity remained more geographically diverse in 2005: 40% in Asia, 24% in North America and 14% in the North Sea.

It comes as no surprise that **the bulk of 2005 drilling activity occurred in North America** with 70% of wells drilled worldwide. China placed second, with 14%. In 2005, these two geographical areas reported the most substantial year-on-year increases in the number of wells drilled: + 14% for North America and +20% for China. In both cases, onshore wells account for 98% of the total. In the United States, where more than half of these wells were drilled in search of gas, this large gain paralleled the rise in gas prices, on a steady upswing since 2002.

Fig. 4 Number of wells drilled in the world



IHS Energy, Spears& Associates, AEUB IFP/Economics Studies Division/2006

* The numbers published the previous year have been revised upwards, because the data for Canada was inaccurate. See the modified historical trend in the figures.

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For 2006, the North Sea and the Middle East are set to report the highest growth in the number of wells drilled: 23%. **Saudi Arabia is driving this increase**: during the summer of 2006, a record number of rigs (about 100) were in operation there and the objective of the national company Saudi Aramco is 120 rigs by year-end. This goes hand in hand with the kingdom's announced goal of boosting production capacity to 12.5 MMbbld by 2009.

The market

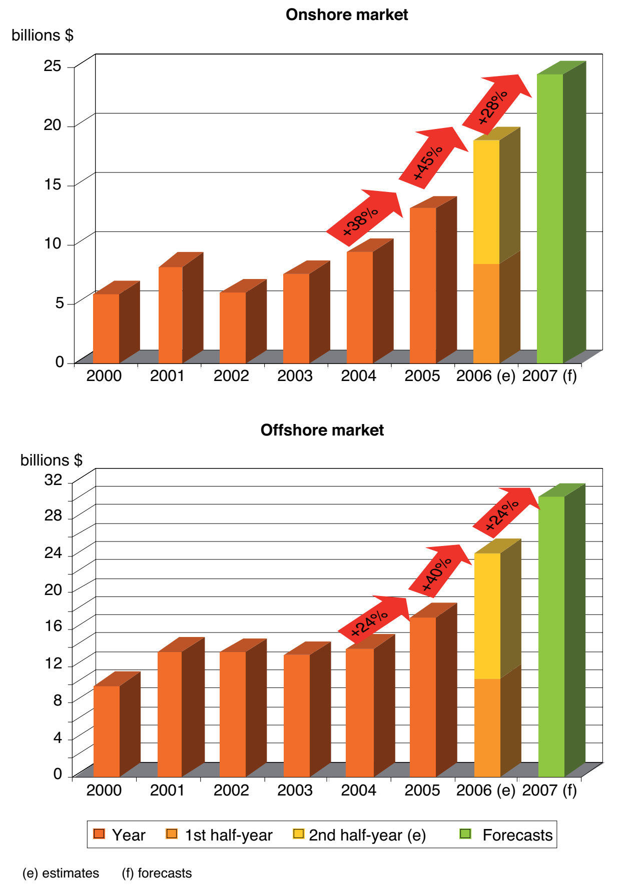
- *New records for 2005 and 2006*

The drilling market is **up 30% year-on-year to $30 billion in 2005,** a new record. Onshore sales surged by 45% to $13 billion, offshore sales by 24% to $17.5 billion.

For 2006, drilling activity indicators are up, major contractors are reporting higher earnings and sectoral sales should reach $43.5 billion (+42%). It is thought that growth will reach 44% on the onshore market, worth $19 billion, and 40% on the offshore market, worth $24.5 billion.

The combination of two factors is responsible for this expansion: the increase in the number of wells drilled and that of the price of services in this business area. **The number of drilling rigs in activity worldwide hit an all-time high** of 2,500 units in 2005 and early 2006. For certain types of equipment, supply could not cover demand. In the offshore sector, rates for the utilization of offshore drilling platforms stood at 91% for the first six months of 2006 compared to 81% in 2004. As a result, **the rates for offshore drill-rig rentals have reached unprecedented highs**: between June 2005 and June 2006, semi-sub day rates soared in the North Sea (+170% to $322,000/day) and in the Gulf of Mexico (+103%). Jack-up rates gained 142%, reaching prices of $162,000/day. For units drilling in very deep waters, rates could exceed $450,000/day.

Fig. 5 The drilling market



Source: IFP. IFP/Economics Studies Division/2006

There is some relief in sight: **the number of offshore new-builds under construction** or on order was up 120% in June 2006 over 2005. There will be 91 new rigs: 25% are scheduled to come onstream in 2007 and 45% in 2008. This should help alleviate the shortage, but the market will be extremely tight in the meantime.

Contractors averaged net earnings three times higher than in previous years. Generally, they spent this extra cash to purchase new equipment and/or upgrade older equipment to market standard, or for stock repurchase transactions.

For 2007, the number of wells drilled should increase between 5 and 10% versus 16% in 2006. The order books of the drilling companies are full. The market should continue to grow, but more moderately than in 2006, at a rate of about **25%, and should reach $54-55 billion.**

- *Key players*

In **onshore drilling**, Nabors Industries stayed out front in 2005, with about 18% of market share. Ensign Resource and Patterson UTI Energy accounted for 12% and 11%, respectively. The latter acquired the assets of Key Energy Services and boosted sales for 2005 by 83%. Precision Drilling, which sold its division for onshore drilling outside North America to Weatherford in 2005, represented 6% of the market (compared to 10% in 2004). Pride International, Helmerich & Payne and Grey Wolf each took about 5% of the market, like they did in 2004.

In offshore drilling, Transocean continued to prevail with market share of 17%. Global Santa Fe, whose sales were up 39% in 2005, came next with 9% of the market. Diamond Offshore and Noble Drilling recorded sharp gains in 2005 (+51% and +30%, respectively) and found themselves on the same footing as Pride International, which usually occupies the Number Three position.

The international market watched the emergence of Chinese companies such as CNPC Services & Engineering Ltd, a subsidiary of CNPC. In 2005, this company expanded its rig fleet (mostly onshore rigs) by 18%, from 124 to 147 units.

Construction of offshore production infrastructure

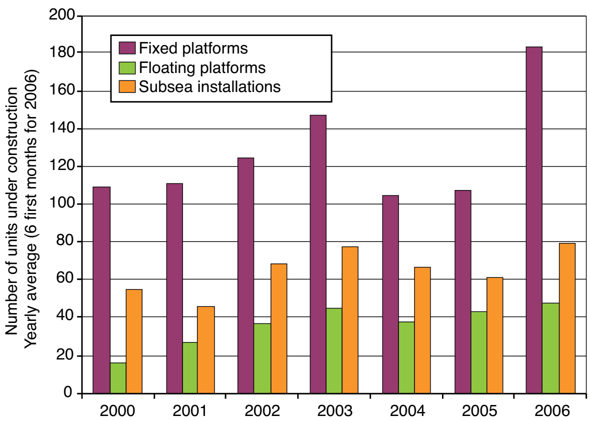
2006: A comeback for offshore construction

Offshore construction, measured in terms of the number of installations under construction, is up on all segments for the first half-year 2006 compared to the same period of 2005: +70% for fixed platforms, +12% for floating platforms and +31% for subsea installations.

Considering all offshore production installations collectively, the most active parts of the world were Latin America and the Asia/Pacific area, where in 2006 the number of installations under construction tripled and doubled, respectively. In these areas, offshore production is expected to climb sharply. The Asia/Pacific figure should increase by 40% by 2010, primarily driven by gas development operations. In Brazil, Petrobras introduced an ambitious program to nearly double current production by 2015, thanks to the development of offshore resources.

In addition to units already under construction, projects are also up. The figures for all types of production installations nearly doubled between 2005 and 2006, up from 234 to 519 units. This trend indicates **that activity on the offshore construction market will probably be sustained in 2007-2008**.

Fig. 6 Offshore construction



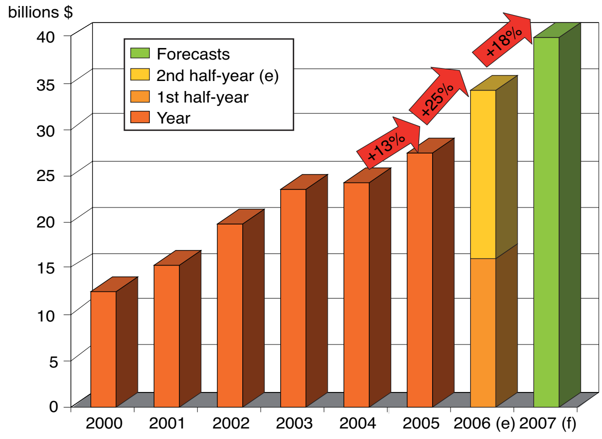
Source: ODS-Petrodata. IFP/Economics Studies Division/2006

The market for offshore engineering, construction and equipment

• *2005-2006: Back to strong growth*

In 2005, strong growth was back on the offshore construction market: **up 13% over 2004 to $27.5 billion**. For **2006**, based on a number of indicators including half-yearly corporate earnings, one can estimate that **total sectoral sales will rise by 25% to $34.5 billion.**

Fig. 7 The market for offshore engineering, equipment and construction



(e) estimates (f) forecasts

Source: IFP IFP/Economics Studies Division/2006

In light of currently high demand from oil companies for offshore equipment, the market will be stretched to supply raw materials, especially steel. Moreover, capacity at construction yards is inadequate. Finally, delivery times for certain parts are considerably longer; as a result, it is not possible to fully exploit capacity and supply shortages are aggravated.

As net earnings doubled on average between 2004 and 2005, companies on this market found themselves with plenty of extra cash in 2005. These funds were allocated to improve problematical financial situations or reduce debt (McDermott, Horizon Offshore), carry out stock purchase transactions (Technip, FMC) or invest in new capacity in services (Acergy, Subsea 7 in particular).

Based on the current status of backlogs, new orders and construction projects, the market should continue to grow **in 2007**: **+15 to 20% over 2006, which is equivalent to $40 billion.**

• *Key players*

Technip, Saipem and AkerKvaerner continued to be dominant, each with market share of 12-13%, with FMC Technology in the Number Four spot. Acergy, SBM Offshore and Subsea 7 each controlled about 5% of the market, with the latter two scoring a higher percentage than in previous years.

In 2005 and 2006, three market players changed their names: in 2006, Cal Dive became Helix Energy following its acquisition by the British company of the same name; Stolt Offshore became Acergy following a reorganization; in 2005, IHCCaland became SBM Offshore following the sale of its shipbuilding business.

A few years ago, South Korean yards were still exclusively involved in subcontracting. To an increasing extent, they are

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bidding for oil company contracts, often jointly with major supply and service companies. Hyundai Heavy Industries and Samsgung Heavy Industries are two examples. For now, Chinese companies have not ventured beyond the role of subcontractor, which was true of South Koreans only a few years ago.

Conclusions

In a favorable business environment driven by high oil and gas prices, the upstream service and supply sector had a banner year in 2005, and this trend continued in 2006. This year, capital expenditure and key markets saw especially high increases—ranging from 25% for capex and offshore construction to 40-45% for seismic and drilling—and should continue their upswing in 2007.

In recent years, activity has shifted into overdrive. This has led to higher raw material prices and shortages of equipment construction capacity (drill rigs, production equipment, etc.) and qualified personnel. During the market slump of the late 1990s and early 2000, oil and supply companies had to scramble for clients and were often forced to downsize. Today's challenge is just the opposite: in order to honor new orders, they must find competent personnel and reliable suppliers.

Table 1
Investment and market trends

	2005 (%)	2006 (%)	2007 (%)
Capital expenditure	+25	+25	+20
Seismic	+25	+40	+20
Drilling	+30	+42	+25
Offshore construction	+13	+25	+18

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