

Activities and markets in exploration-production

At year-end 2008, a sharp decrease in oil and gas demand coupled with a credit crunch caused the postponement of many exploration-production projects. 2009 was marked by substantial overcapacity in terms of equipment and installations, which drove down the level of activity, the price of services and the income of suppliers. The year is nonetheless perceived as marking a lull in an upward cycle and capital expenditure is expected to rise slightly in 2010.

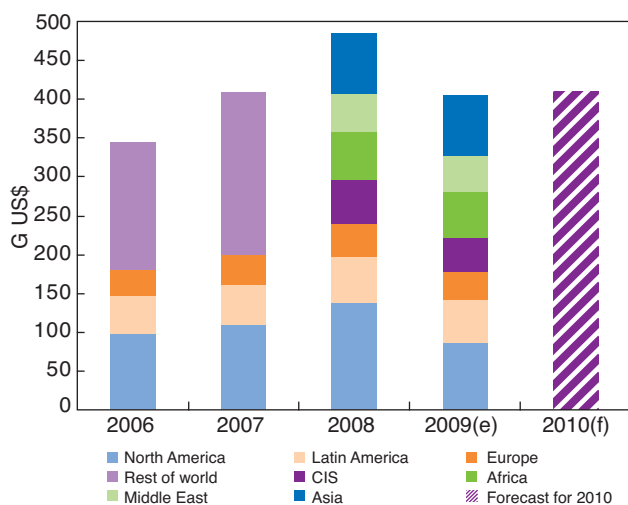
A decrease in investments

In 2009, world E&P investments decreased by about 16% to \$406 billion, nearly \$80 billion less than in 2008, although investments remained at a very high level (Figure 1). There was a striking contrast between:

- North America: -37%,
- and the rest of the world: -8%.

In 2010, it is expected that capital expenditure will remain stable or increase slightly (by 5% at most) as activity rallies.

Fig. 1 - Trend in E&P investments



Sources: Barclay's, DTI, NPD, DEA, IFP and figures published by companies and States

In 2009, the economic environment offered little incentive to invest in new capacity: demand slumped, the price level was uncertain and credit was tight. During the first half-year, the conditions of access to oil and gas acreage remained very constraining and the cost of services and equipment very high. Oil companies massively postponed investments when possible, waiting for more favorable conditions. In the second half-year, the price per barrel stabilized at consensus price levels, costs came down somewhat and it seemed that demand might be starting to rally, so prospects for the exploration-production sector appeared a bit brighter.

The oil companies believed that demand would rise in the medium and long-term. As a result, the largest development projects – those of structural importance to a particular country or company – were not jeopardized by the crisis. Specific examples include the development of the Brazilian subsalt zone and the Gorgon gas project in Australia.

Looking to the very long-term, the recent discoveries of Tupi (Brazil) and Tiber (Gulf of Mexico) at very great depths show that there are still excellent opportunities for the exploration and production of hydrocarbons, although the technology involved is increasingly complex.

The steep plunge in the price per barrel coincided with a credit crunch, putting the brakes on investment. Whereas the Brent price fell by an average of 40% between 2008 and the first nine months of 2009, E&P spending decreased by 16% and the upstream capital cost measured by the IHS CERA Upstream Capital Cost Index (UCCI) by 10% compared to the peak of autumn 2008 (Figure 2). The decline in activity and falling prices are

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held to be equally responsible for lower capital spending in 2009.

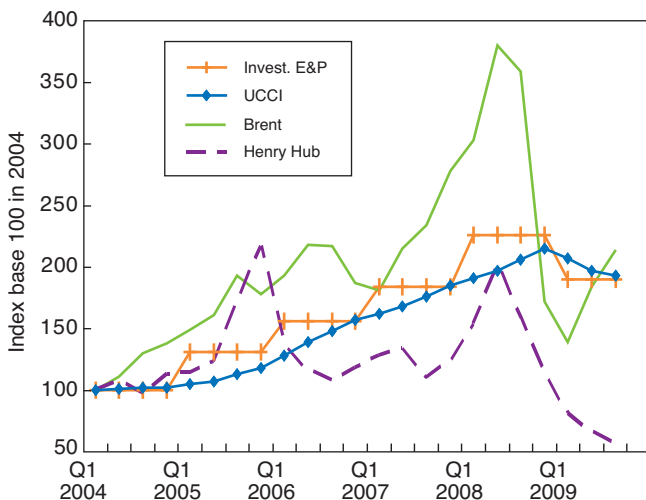
The size of companies was a key factor in withstanding the effects of the economic crisis, especially the increasing difficulty of gaining access to credit:

- the five majors (ExxonMobil, BP, RDSshell, Chevron and Total) put up strong resistance and even announced that their E&P investments, outside North America, were up 9% in 2009 compared to 2008,
- international independents reduced their spending by 13 to 14% on average, outside North America. They had a hard time borrowing to finance their projects and stopped investing when possible to conserve cash,
- national companies cut E&P investments, outside North America, in about the same proportion as the independents. Most of them, subjected to the pressure of a State budget, saw their investment capacity decline, although there were exceptions (i.e. in Abu Dhabi).

The oil-producing states did not significantly reduce the sums they expected to be paid under production-sharing contracts. This was obvious in Indonesia, Iraq (when it made the first call for bids) and Kazakhstan. Only a year after the onset of the economic crisis, this is not surprising, but the situation could change if demand does not start rising again soon.

As for service and equipment suppliers, they seemed to have lost some of the ground gained during the boom years. There were fewer contracts to bid for and orders were down. To win contracts, they had to substantially reduce their profit margins.

Fig. 2 - Trend in E&P investments, prices and costs



Sources: IFF, Platt's, CERA

North America was hardest hit by the decline in investments (-37%). There are several explanations for this:

- the development of unconventional gas supplies in recent years, combined with lower industrial demand, translated into overcapacity and a 57% drop in the Henry Hub price between 2008 and autumn 2009, knowing that the bulk of upstream activity, especially onshore, is determined by the gas market,
- the structure of the North American industry is different from elsewhere in the world. It consists mostly of small or very small independents, which had to slash investment to survive,
- due to high costs, operators decided to put off major undertakings, especially tar sands projects.

The Commonwealth of Independent States was also severely affected, especially Russia (-25%), where the largest companies encountered major financial difficulties. In contrast, there were few postponements in Kazakhstan. For instance, the Kashagan project stayed on track.

In Europe, E&P investments in 2009 were down 12% to \$37 billion. In the United Kingdom, spending fell by 25% compared to the previous year, whereas in Norway it was up by 2%. Several discoveries, mostly gas fields, were made in 2009. The only thing that these very mature zones can offer to attract companies is the stability of contractual terms and conditions.

In Latin America, E&P expenditure fell by 6% in 2009 to \$55 billion. In Venezuela, PDVSA reported a 35% decrease. In Brazil, even though Petrobras cut investments by 6% in 2009, the development of the subsalt zone attracted capital. In the medium term, E&P spending in Brazil should see strong growth. Activity was intense in Mexico in 2009 (+68% wells drilled). The country was hurt by being closed to foreign investment, but the recent reform in the energy law should improve the situation.

In the Middle East, E&P investments totaled an estimated \$47 billion in 2009, down 4% over 2008. In Saudi Arabia, the highlights of the year included the finalization of large projects (Khurais, Khursaniyah and Shaybah) as part of the vast program undertaken by Saudi Aramco to boost production capacity to 12.5 Mbbl/d. Iraq made a comeback on the international scene that did not seem very promising at first. Its first call for bids met with disappointing results, although the situation then improved and three fields found takers (Rumaila, Zubair and West Qurna). The second call for bids was clearly a success. In the medium and longer terms, E&P investments in the region should remain at about the same level, sustained by the anticipated development in Iraq and by fast-growing domestic demand for gas.

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In Africa, E&P investments in 2009 showed strong resistance to the crisis, down by only 4% to \$59 billion. Countries that had not previously attracted much attention were in the spotlight this year, such as Ghana, with the development of Jubilee, and Uganda, where the number of discoveries has multiplied recently. Among the big oil-producing countries, investors in Nigeria were starting to hope that they would soon feel more serene about investing in the country: the MEND rebels were abiding by the cease-fire declared following the government amnesty. A reform of the oil and gas sector is underway to give the national company NNPC more independence. For Angola, 2009 marked the ten-year anniversary of its first undertaking in offshore production, which made it one of the world's leading producers.

In Asia, investments were stable at about \$80 billion in 2009 and primarily focused on natural gas. This year, Australia saw a number of operations, e.g. offshore gas discoveries and the launch of the Gorgon LNG project. In the medium term, investments in Australia are expected to grow. Conversely, in their most recent calls for bids, India and Indonesia did not succeed in attracting international oil and gas companies, which found their requirements too demanding given the difficulties presented by the blocks.

Without a doubt, the big winners in this crisis are the Chinese companies CNPC, Sinopec and CNOOC. They have plenty of cash for financing international growth to secure their long-term oil and gas supply. The biggest transaction was the acquisition of Addax Petroleum by Sinopec (450 Mbbl of reserves in Africa) in June. Other development deals were struck by CNPC and BP (Rumaila field, Iraq), CNOOC/NIOC (South Pars, Iran) and CNPC/NIOC (Azadegan North, Iran). The Chinese State entered into loan agreements – many to be paid off in oil – with various companies (Rosneft and Transneft) and producing countries (Venezuela, Brazil and Ecuador). Other financing deals bore on the construction of oil pipelines (Russia), gas pipelines (Kazakhstan), natural gas liquefaction units (Papua New Guinea, Australia and Indonesia) or refineries (Costa Rica, Iran, Niger and Sudan).

More and more frequently, the Chinese oil companies met with hostility on the part of countries to which they wished to gain entry. This year, the Libyan government refused to approve the CNPC takeover of Verenex (this recalls the attempt to acquire Unocal, finally absorbed by Chevron in 2005) and the Nigerian government blocked a move by CNOOC to take the place of the majors in specific blocks.

Not only are Chinese companies seeking to acquire massive holdings in oil and gas, but also in other key commodities including specific industrial minerals.

The supply sector quickly felt the impact

The level of E&P investments by oil companies determines the level of supply-side activity and supplier income. Lower capital outlay quickly caused the supply sector to contract; not even the largest service suppliers were spared. A closer look at three key segments – seismic, drilling and offshore construction – will help understand the precise effects of spending cuts made in 2009 by the oil companies.

The seismic sector

Activity still growing worldwide

Expressed in terms of active crews, the world seismic industry grew by 8% in the first nine months of 2009 compared to the same period of 2008. It stayed at an unprecedented level, peaking in February 2009 when there were 394 active crews worldwide. Nonetheless, there was a surge in the number of land crews on standby, especially in the United States.

Outside North America, the seismic sector reported a 16% increase, driven primarily by offshore activity. The geographic regions posting the highest growth rates were the Middle East (+45%), South-East Asia (+20%) and Africa (+18%). Latin America and Europe were up by 14% and 12%, respectively. On the other hand, seismic exploration in Russia declined (-3%). The North American market contracted the most (-50% in Canada and -9% in the United States); the market players reacted very strongly to the decline in crude and gas prices by postponing and cancelling investments, especially those relative to unconventional crude and gas.

In the marine seismic sector, the fleet has been renewed at a brisk pace in the last few years. Contractors need the latest 3D multi-streamer seismic acquisition vessels to survey zones containing complex geology formations. The oldest data acquisition boats are converted into source vessels or decommissioned and sold.

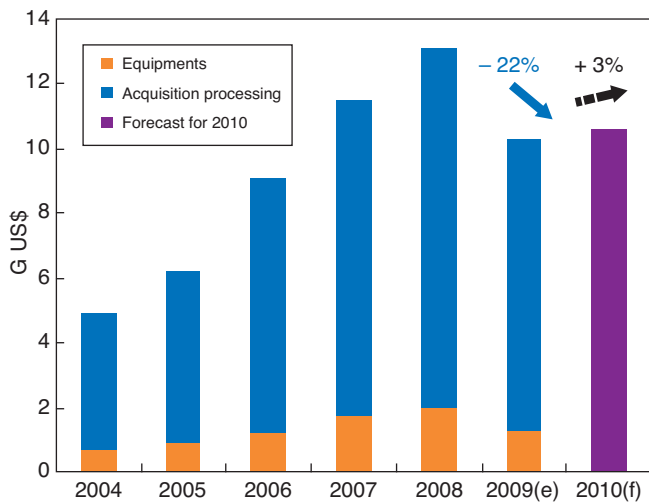
There was also a significant increase in multiclient data acquisition surveys, which permit a high utilization rate for vessels and ensure their profitability *via* the compilation of a seismic data library as a source of future income. This trend had already been observed in the late 1990s.

Overcapacity caused the market to shrink

Although the level of activity registered in the first half-year was satisfactory, most of the geophysics companies

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Fig. 3 - The seismic data acquisition processing and equipment markets



Source: IFP

saw their sales and profits fall in 2009 (Figure 3). The seismic market shrank by an estimated 22% overall, broken down as follows:

- seismic data acquisition processing: -19%,
- seismic equipment: -37%.

Excess capacity (crews and data acquisition equipment) exerted a downward pressure on prices, margins and corporate profits. In 2009, sales were down by about 20% and profits by 50% on average. The extent to which a given company was affected also depended on its specialization and geographical location. Worst hit were the onshore segment and the North American market.

In 2010, activity on the data acquisition and processing segment is expected to remain stable owing to the signature of large contracts, but the price of services will fall due to the surplus of data acquisition equipment.

The suppliers of seismic equipment (data acquisition systems and sensors) reported a decline in sales of more than 30% for the first six months of 2009. This segment is situated upstream from data acquisition and processing, which presented substantial surplus capacity. In October 2009, BGP and Ion announced that they were creating a land seismic joint venture. Ion would receive a cash payment of \$175 million from BGP in exchange for some of its assets and for contributing its land imaging systems and intellectual property to the joint venture.

The drilling market

Activity fell substantially

An estimated 74,000 wells were drilled in 2009, down 32% year on year. North America saw activity drop by

45% over 2008. Most of the wells drilled worldwide are onshore (96%), which is therefore the segment hardest hit (-33%). Offshore wells (4% of drilling activity) registered an 11% decrease.

Onshore drilling

North America (the US and Canada) accounted for 60% of wells drilled worldwide in 2009 and Asia for 26%. The remainder was mostly located in Russia and the other CIS countries, Latin America and the Middle East.

Activity remained stable in Asia and China (+1%), but fell heavily everywhere else. The largest downturns were reported for North America (-45%) and Europe (-39%). Least affected were Latin America (-3%), the Middle East (-10%), the CIS (-10%) and Africa (-15%).

In the United States, drilling activity was down but new-generation rigs put up strong resistance. The latter improve drilling efficiency and reduce rig installation time. The estimated cost is \$20,000-25,000/day for new rigs versus \$10,000-15,000/day for the others. Renewing the rig fleet with new-generation equipment helped maintain day rates despite the decrease in demand.

The day rate is an indicator that lags behind the spot price for rig rental, since many rigs are reserved under long-term (multiyear) contracts. The day rates observed, which remained stable, did not reflect that utilization rates were falling and land rig availability rising. Unless activity shows a significant recovery in 2010, the day rates should drop even more sharply.

Drilling offshore

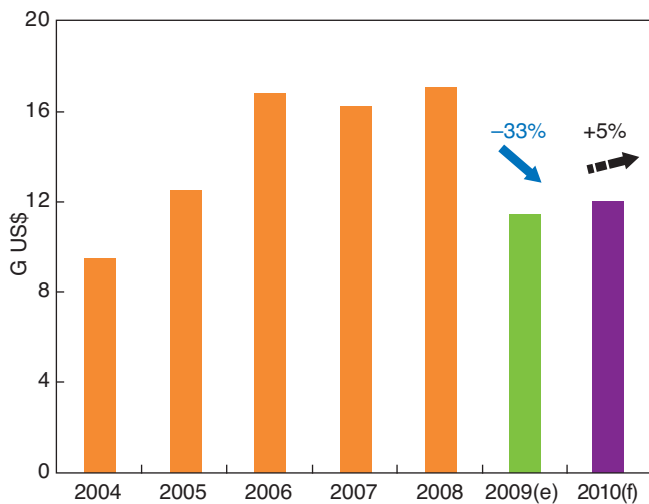
Asia (including China) accounted for 50% of offshore drilling. Next came the Gulf of Mexico (12%), the Gulf of Guinea (10%) and the North Sea (14%). As for Latin America, offshore development in Brazil boosted its market share to 8% of offshore drilling.

With activity down by 11%, marine drilling was not as hard-hit as drilling on land. China saw an increase (+15%) while the rest of Asia fell by 14%. Latin America and the Middle East remained stable compared to 2008. Activity fell in all other key geographic regions: the United States (-33%), Europe (-9%) and Africa (-4%).

In the first nine months of 2009, the average world utilization rate for drill rigs slipped by 4%. The Asia-Pacific, the Gulf of Mexico and the North Sea all saw jack-up utilization rates fall at about the same rate (-25%). The situation for semi-sub day rates showed greater contrast: they remained flat overall for the Asia-Pacific region (+1.5%), but dropped by 4% in the Gulf of Mexico and by 20% in the North Sea.

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Fig. 4 - Onshore drilling market



Source: IFP

Two drilling market segments that reacted differently

Onshore drilling was hard hit

In 2009, the onshore market fell by an estimated 33% to \$13.4 billion (Figure 4). Land drilling companies were affected variously, depending on their development strategy, geographical positioning and policy of investment, especially in new-generation rigs:

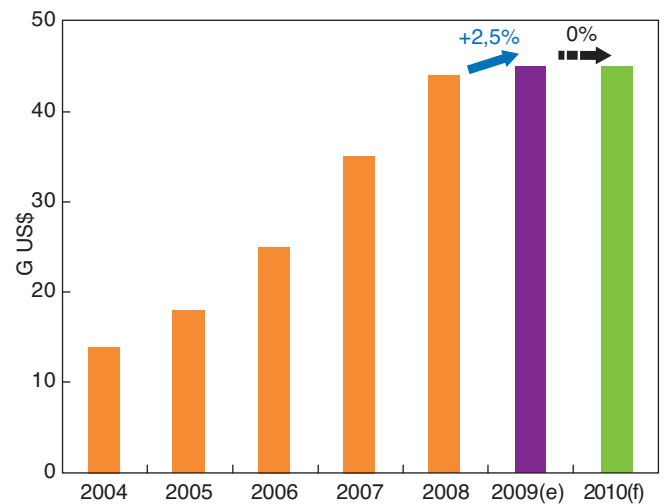
- among the market leaders, Nabors, Helmerich & Payne and Ensign saw 2009 sales go down by between 30 and 35%. These large companies managed to limit the drop by regularly renewing their drill fleets and diversifying to operate internationally and be less dependent on the North American market. By negotiating long-term oil contracts, they smoothed the effects of the economic crisis,
- Patterson-UTI continued to focus on the North American market with an aging drill fleet and saw 2009 sales plummet by 66%,
- Saipem, which is not exposed to the North American market, should see its 2009 sales climb by 17% to occupy fifth place.

Regarding the outlook for 2010, business activity is expected to rally but day rates should be lower, allowing the market to grow slightly.

Offshore drilling put up good resistance

The offshore segment was much less adversely affected by the economic slump and should remain at about \$44 billion, up slightly (+2.5%) over 2008 (Figure 5). Two opposing trends could be observed. On one hand, tremendous efforts in deepwater exploration have been made. On the other, many offshore drilling projects in

Fig. 5 - Offshore drilling market



Source: IFP

shallow water and transition zones were postponed or cancelled.

In 2010, activity on the market should recover slightly but day rates are expected to be lower. In 2009, the jack-up segment was oversaturated, which does not bode well for growth in 2010.

Transocean stayed in the lead with 25% of the market and stable sales for 2009. Diamond Offshore and Noble Drilling, which rank second and third, progressed by 3% and 4-5%, respectively. Seadrill/Smedvid and Fred Olsen Energy distinguished themselves by reporting sales up by 23%. Seadrill/Smedvid specializes in harsh-environment deepwater drilling. In 2008, it landed a Petrobras contract worth \$4.1 billion. Conversely, Helmerich & Payne, which operates mainly on the jack-up niche in the Gulf of Mexico, saw sales plummet by 37% in 2009.

Offshore construction

Activity was still growing

For the first nine months of 2009, the number of offshore newbuilds reached a record of 400 units, up by 7% over 2008. The breakdown was as follows: fixed platforms (59%), floating support systems (12%) and subsea installations (29%). The segment for fixed platforms and subsea installations expanded while that for floating support systems contracted.

Fixed platforms

The number of fixed platforms built per year worldwide rose from 108 to 234 in five years. The bulk of this growth took place in Asia-Pacific, the Middle East and Latin America.

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Half of the fixed platforms built in 2009 were located in the Asia-Pacific region, a quarter were in the Middle East, 14% in Latin America and 9% in Africa.

Floating platforms

After stagnating in 2008, the construction of newbuilds fell 36% over the first nine months of 2009. Business was mainly located in Latin America (28%), Asia-Pacific (21%) and West Africa (19%). The most pronounced downswings took place in the Asia-Pacific region, North America and Western Europe. As far as developments at depths greater than 1,000 meters are concerned, an IFP survey indicates that floating support systems saw their market share drop by 4% between 2006 and 2008. There was also an increase in the proportion of FPSOs (from 45 to 55%) and TLPs (from 17 to 19%) to the detriment of Spar platforms and semi-subs.

Subsea installations

Subsea tie-backs are installations used to connect a remote field to existing production facilities. For the most part, they are employed in the development of satellite fields in mature areas like the North Sea, but also, increasingly, for so-called "regional" developments: a single floating structure is used to develop several fields of comparable size (West Africa, the Gulf of Mexico). 28% of these installations are built in Western Europe. The other key geographic regions account for 15 to 20% of subsea newbuilds. According to an IFP study, subsea tie-backs are expected to represent 60% of future offshore developments at depths greater than 1,000 meters (+10% compared to 2006).

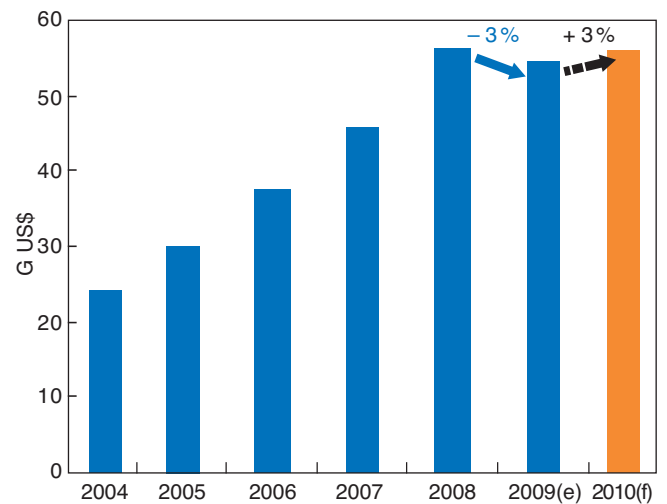
Total sales down slightly

The offshore construction market saw several years of strong growth between 2005 and 2008, doubling in size from \$27 to \$54 billion (Figure 6). 2009 marked a pause in this uptrend, with the market contracting by about 3%.

In 2009, the top three on this segment – Saipem, Technip and Aker Kvaener – continued to grow (by 14%, 4% and 2%, respectively). Smaller companies like Acergy or Oceaneering were harder hit by the market slowdown.

Large offshore projects are in the planning for construction after 2009, as evidenced by the order books, which are down yet remain relatively full. The year 2010 can be expected to bring a return to modest market growth (+3%). With the price per barrel stabilized at between 70 and \$80, deep-offshore projects that had been postponed can be resumed.

Fig. 6 - Offshore construction market



Source: IFP

Finally, it is expected that field developments undertaken at depths exceeding 1,000 meters will be more numerous and even deeper in future: it is estimated that more than 30 fields a year at depths exceeding 1,000 meters will come onstream by 2014.

In conclusion

Driven by increasing oil and gas demand, the upstream sector boomed from 2004 to 2008. The specter of a resource shortage loomed, equipment became scarcer and qualified labor was hard to find. Service and equipment costs and prices reached new heights, sustained by the large amounts of cash generated by the market players.

Starting in the second half of 2008, there was a reversal in trend: demand became depressed and companies had a hard time finding sources of financing. The combination of these two factors slammed the brakes on activity. At year-end 2008, all eyes were on the crude price as it took a nosedive. The question was when, and at what level, it would bottom out. Whenever possible, capital spending was postponed indefinitely. The industry was not expecting such a sudden and radical turn for the worse.

In 2009, the price of crude oil stabilized early in the year and so did the general situation; the industry bound up its wounds and adjusted to the new context. Oil companies were in a strong position to renegotiate service and equipment contracts that had already been awarded. Suppliers reduced their margins and, in some cases,

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their workforce. Projects resumed very gradually, as the oil price rose. Throughout this period, market players remained convinced that the situation was temporary. At year-end 2009, they expected the upstream sector to pull out of the recession, with a significant rally in activity. In the longer run, since hydrocarbons are vital to cover world energy demand, activity in the E&P sector should return to a high level.

In 2010, exploration-production activity should continue to recover slowly, while prices are expected to be lower than at year-end 2008 and in early 2009 (Table 1). In 2009, the slump in activity and prices brought investment down. For 2010, a rise in activity should drive investment up.

Table 1
Capital expenditure in E&P and key markets

	2008	2009	2010
E&P spending	+19%	-16%	0 to 5%
North America	+26%	-37%	
Rest of world	+16%	-8%	
Seismic	+14%	-22%	+3%
Drilling on land	+5%	-33%	+5%
Drilling offshore	+26%	+2.5%	+0%
Offshore construction	+15%	-3%	+3%

Source : IFP

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