

Spending surge for offshore drilling

The number of offshore wells drilled around the world has risen along with oil company profits and the oil price. However, growth is patchy and, apart from in deepwater, it is sporadic. Meanwhile, actual spending on wells is rising rapidly in all categories and in all regions – even in the mature North Sea. As the most marginal of opportunities are now exploited with expensive modern technologies, wells are taking longer to complete and, with rig and other shortages driving day rates higher, all wells are getting more expensive. A new report from Douglas-Westwood and Energyfiles describes and quantifies the global outlook. Here, Dr Michael R Smith, Energyfiles, highlights the key findings of the report.

In 1897 the first well to tap oil in a reservoir directly beneath the sea was drilled from a wharf in California. Over the next 40 years drilling continued in the lakes, swamps, bays and beaches of the US, Venezuela and Azerbaijan until, in 1937, the first fully offshore field was developed. Some 17 years later, in 1954, the first mobile jack-up rig was launched, heralding the boom years in which modern leasing policies were adopted and massive improvement in basic technologies led to rapid growth of drilling in the open seas, peaking in 1983.

Most oilfield professionals over 45 years old remember the 1983 Mukluk well, drilled 10 km off the coast of Alaska in the shallow waters of the Beaufort Sea around 40 km north-west of the US' largest oil field, Prudhoe Bay. At the time, forecasters were predicting unbroken oil price growth and the owners of Mukluk, led by Sohio – a company that was run and is now owned by BP – built an expensive gravel island in this remote location to test a structure believed to contain between 1bn to 2bn barrels of oil.

But the well was dry, the structure

probably breached. Mukluk ultimately cost over \$120mn to drill, with a further \$1.5bn spent on exploration leases in the area. It ranks as the most expensive dry hole ever. After many decades of success, failure at Mukluk was to mark the beginning of a new era of risk-averse, conservative, technology-led drilling strategies. Wildcat exploration drilling continued, but very high cost wells were all but abandoned until the oil price stabilised in the 1990s.

As a result, success rates went up and new production was realised from deeper and deeper waters and more extreme environments, accompanied each year by new drilling records. Unrealised at the time, the Mukluk well marked the beginning of our modern era of offshore drilling in which careful risk/reward decisions would be made to properly justify almost every well.

However, we are now entering a new phase in offshore drilling – one led by shortages of equipment and personnel, as well as shortages of opportunity. With costs rising rapidly, the aim is to reduce the number of wells – even if this means that those being drilled become exceptionally expensive.

Well numbers hardly move

Global offshore drilling levels have not risen in concert with the oil price. Not only are there fewer opportunities, but also many of the high risk drilling targets that were routinely drilled in the early 1980s can now be effectively written off by improved evaluation technologies. Wells are designed to reach targets more accurately and more cost-effectively, and to achieve greater individual flow rates. This may mean that wells cost more and take longer, but it also means that fewer are needed.

From 1991 to 1999, well numbers ranged from a low of 2,300 in 1992 to a high of 3,450 in 1998. However, since 2000 they have stabilised, averaging between 3,000 and 3,200 each year. Reductions in opportunities in shallow waters have been counter-balanced by moves towards increasing water depths and gas. Deepwater well numbers continue to increase, whilst shallow water wells are now expected to decline after the increases in 2005 and 2006 – albeit with a modest oil price-led resurgence in later years.

In fact, shallow exploratory drilling has been on a declining trend since 1997. Even deepwater exploration drilling, which grew rapidly up to 2001, has been flat due to a shortage of new areas to exploit. Conversely, shallow development drilling saw almost unbroken growth through 1991 to 1999, before beginning to decline as new field development opportunities in many of the shallow water areas of the world dwindled. With surging oil prices, it stabilised through to 2005 – but further declines are now forecast. However, total development drilling will continue to be supported by rapid growth in deepwater drilling, especially in West Africa and the Gulf of Mexico. (See Figure 1.)

Prices soar...

Prices have dramatically increased for rigs and other services, and this was especially true in 2005. The magnitude of growth is attributable to intense competition within the service sector over previous years of relatively low prices, leading to large-scale consolidation of providers and under investment.

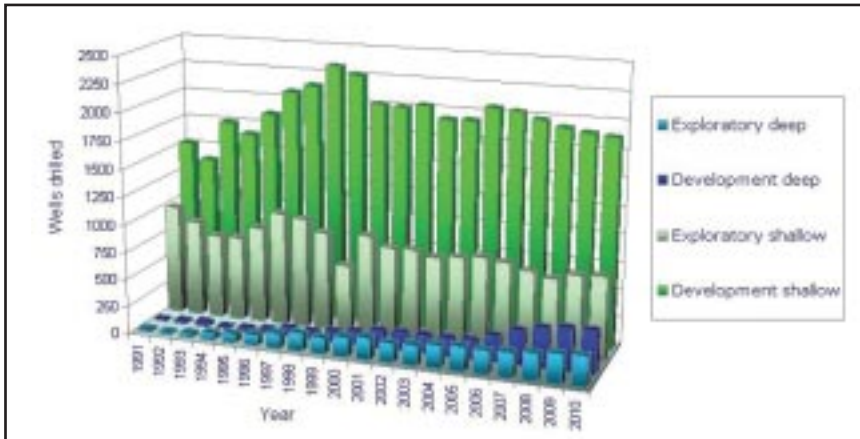


Figure 1: Deepwater wells dominate activity as shallow waters stagnate
 Source: The World Offshore Drilling Spend Forecast, Douglas-Westwood © Energyfiles

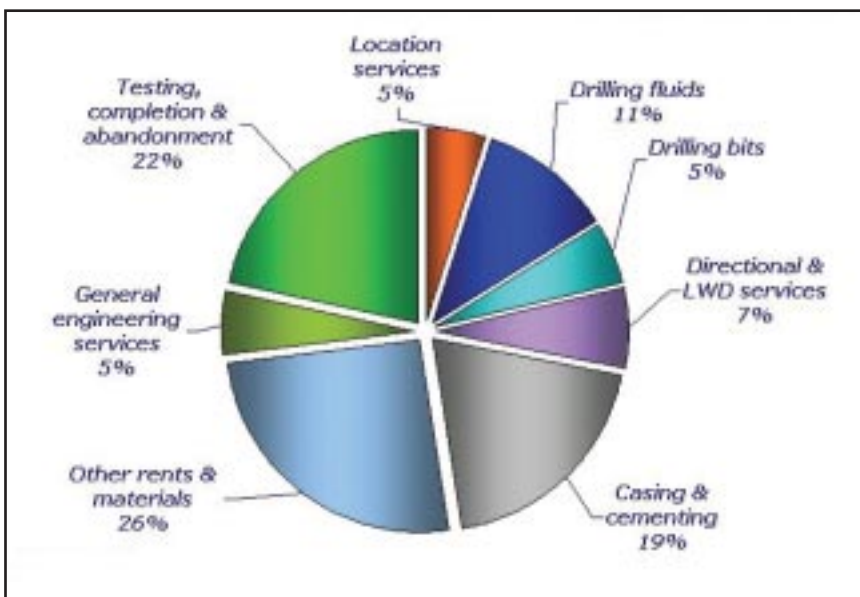


Figure 2: Around 42% of drilling spend goes to a wide range of engineering services
 Source: The World Offshore Drilling Spend Forecast, Douglas-Westwood © Energyfiles

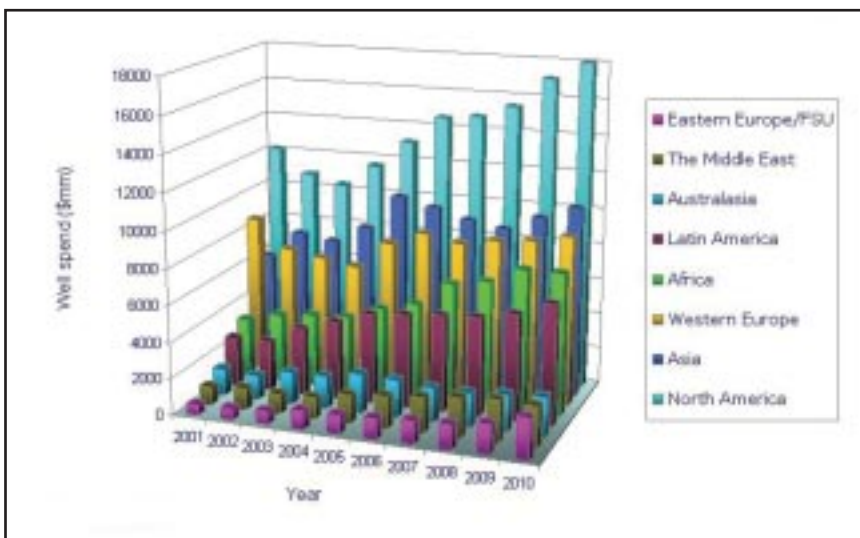


Figure 3: Marginal growth is forecast in offshore well numbers, but spending will surge
 Source: The World Offshore Drilling Spend Forecast, Douglas-Westwood © Energyfiles

Oil price rises have a big effect on prices, leading to increased activity and demand for drilling services, increasing the cost of services due to the higher cost of energy and inflating the profit expectations of the service sector and the salary demands of its personnel.

The Energyfiles' oil price forecast is of erratic, but generally flat, levels in 2006 as oil demand growth is forced down by price; as new non-Opec production enters the market from the deepwaters of West Africa, from the Gulf of Mexico and from the Caspian Sea; and as new gas developments continue to replace oil use in Asia. But these effects will be temporary, with demand in Asia mopping up spare capacity as soon as it comes available. Renewed oil price escalation is forecast after 2008, eventually leading to further cost inflation in the drilling sector. By 2012, the world will have entered a new, permanent energy capacity-constrained environment waiting on real large-scale alternatives to oil in the transport sector.

Costs are also going up as more advanced rigs and services are used for deeper and more complex reservoirs and more extreme conditions. The total number of wells being drilled globally will remain roughly constant, but the combined effects of inflation and general cost rises are creating an increasing disconnect between spend and well trends.

... and spends go up

Drilling is the most important cost sector in offshore operations, representing at least half of all offshore expenditure in nearly all regions, especially in our fastest expanding sector – deepwater development. It is the activity that service companies, oil and gas companies, and governments use for forward planning; guiding strategies and policies on equipment and funds.

The likely future volume of offshore drilling spend controls where, when and how much global oil investment capital is required. It is estimated that over the last five years just over \$190bn was spent on drilling, of which \$33bn (17%) was spent on deepwater drilling. Over the next five years, it is forecast that the figure will have risen to over \$260bn, with deepwater drilling expenditure almost doubling to \$65bn (25%).

The cost of drilling a well comprises four elements – rigs, engineering, geoscience and support. Within the offshore drilling sector, 42% of expenditure is directed towards engineering services, 25% is earmarked for support and around 7% goes towards geoscience. Although rigs are the biggest single cost, it is surprising to many that they only comprise 26% of

total well costs. As well as rigs, it is especially worth examining the wide range of engineering services (see Figure 2).

Floods of cash – where will it go?

The location of a well affects all sectors, but especially rig costs. Although with global communication it may be assumed that well costs are almost independent of geographic location, they are not independent of environment, including geomorphology, the quality of infrastructure and climate. In particular, higher mobile drilling costs in deeper waters result from a need for sophisticated and larger units, frequent stoppages and a greater incidence of hazards.

Whilst shallow waters are seeing increased expenditure almost solely because of rising prices and rising unit well costs, deepwater expenditures reflect a real increase in activity, especially after 2007. This is of global importance to the rig contractors and associated drilling services. From a mere 2% of global expenditure in 1991, almost all located in Brazil, the deepwater share had increased to 19% by 2001 and is forecast to reach nearly 30% by 2010.

North America attracts the highest volume of drilling spending in the world (see Figure 3), the majority directed at the Gulf of Mexico. All forms of expenditure are increasing, but deepwater development spending is leading growth. The Asia-Pacific witnesses the second highest volume of drilling spending, the bulk in south-east Asia. Shallow water spending is flat or declining, but deepwater exploratory and development spending is forecast to increase – even though deepwater spending in Asia is rather limited.

Western Europe attracts the third highest volume of drilling spending – almost all in the UK and Norway. Spending is increasing slowly, despite a reduction in wells drilled. Deepwater spending is modest due to a lack of deepwater basins outside Norway. Latin America comes fourth, with the majority of drilling spending directed at Brazil, Trinidad and Mexico. Africa was fifth, but will move to fourth position. It is dominated by Angola, Nigeria and Egypt. Africa has enjoyed rapid growth in deepwater spending, which is forecast to more than double over the next five years. Continued growth is expected as discoveries are developed and as additional countries begin to drill deep wells.

Eastern Europe and the FSU (Former Soviet Union) attracts only a small share of global offshore drilling spend due to the region's limited offshore area and low potential outside the Caspian Sea

and east of Sakhalin Island. However, shallow water development and exploration spending are both increasing rapidly. Meanwhile, the Middle East also attracts relatively little spending, almost all in the low cost Persian Gulf. The majority is for field maintenance and new gas developments; however, spending is increasing as the Gulf is called upon to maintain and increase output to satisfy world oil and gas demand.

...where can it go?

The relative shallow water decline is driven by a global shortage of opportunities. There is no reason why the oil industry, beyond the limited scope of national oil companies (NOCs), would put capital into expensive, technologically demanding deepwater projects if cheaper, conventional shallow water ones could offer the same profitability. And this is so even if governments try to increase the share they receive from the higher oil prices. It is not a government-driven shortage resulting from poor investment terms – there are just fewer and smaller undiscovered or undeveloped oil and gas fields in shallow waters.

It is especially true for the North Sea, where high oil prices have revitalised activity. Malcolm Webb of UKOOA, writing in *Offshore Magazine* in December, said: 'Companies of all sizes are now seizing the opportunity to raise their investment in this mature basin, and confidence has returned to chase even more prospects.' He went on to say that higher taxes will 'destroy the current investment climate'. However, unfortunately it is not government tax changes that will ultimately limit their ambitions, but a simple lack of good prospects.

Nevertheless, drilling attracts a huge share of global offshore expenditure. Despite declining well numbers in many offshore areas, spending is surging everywhere, providing huge new opportunities for the service industry in both old and new technologies. Drilling services can attract a flood of cash – if you know where to look. ●

The World Offshore Drilling Spend Forecast 2006–2010 is published by Douglas-Westwood. Utilising the 'Energyfiles Global Well Database' it provides a quantitative survey of offshore wells and spending; reviewing and forecasting the world market by region and type of activity, whilst analysing the state of the offshore drilling industry and its technology. For more information, e: admin@dw-1.com or visit www.dw-1.com or www.energyfiles.com