

EXECUTIVE SUMMARY

As surprising as it might have seemed, the price collapse that has shaken the oil market since June 2014 was neither wholly unexpected nor unprecedented. Not unexpected, because earlier editions of this *Report* had pointed at a looming surge in implied OPEC spare capacity, an expression of the supply/demand imbalance that would emerge if the producer group, faced with rising North American supply, held production above the “Call on OPEC and stock change”. Not unprecedented, because more or less equally sharp corrections have rocked the market roughly every 10 years since the price shocks of the 1970s: in 1986, in 1998, and again in 2008. Looking at the medium-term consequences of this latest price plunge, the real question is not so much how price and supply growth expectations have been reset; nor whether a rebalancing of the market will occur – for that is inevitable. The issue is how that necessary rebalancing, and the price recovery that will accompany it, might depart from those that followed similar price drops in the past, and where they will leave the market after they run their course.

Table ES.1 Global balances

	2014	2015	2016	2017	2018	2019	2020
GDP Growth Assumption (% per year)	3.31	3.45	3.67	3.68	3.71	3.75	3.77
Global Demand	92.43	93.34	94.47	95.68	96.86	98.00	99.05
Non-OPEC Supply	56.59	57.32	57.78	58.26	58.96	59.52	60.00
OPEC NGLs, etc.	6.39	6.58	6.82	6.88	6.89	6.91	6.93
Global Supply excluding OPEC Crude	62.98	63.91	64.60	65.14	65.85	66.43	66.93
OPEC Crude Capacity	35.03	34.73	35.12	35.41	35.65	35.91	36.24
Call on OPEC Crude + Stock Ch.	29.44	29.43	29.87	30.54	31.02	31.58	32.12
Implied OPEC Spare Capacity*	5.58	5.30	5.25	4.87	4.63	4.33	4.13

* Spare capacity is defined as the difference between estimated OPEC capacity and the 'Call on OPEC + Stock chg'. Actual idle capacity is lower than spare capacity when OPEC produces above the Call.

Unlike earlier price drops, this one is both supply- and demand-driven, with record non-OPEC supply growth in 2014 providing only one of the factors behind it, unexpectedly weak demand growth another. On the supply side, US light, tight oil (LTO) extraction technologies, which at the time of the previous market correction barely registered as a source of production, have unlocked a vast resource that long seemed off-limits, and have profoundly upended the traditional division of labour between OPEC and non-OPEC. The latest price drop is also occurring at a time when the dynamics of global demand and the place of oil in the fuel mix are undergoing dramatic change. Emerging economies – China chief among them – which 10 years ago seemed an unstoppable engine of near-vertical demand growth, have entered a new, less oil-intensive stage of development. The global economy, reshaped by the information technology revolution, has generally become less fuel intensive. Concerns over climate change are recasting energy policies. And the globalisation of the natural gas market, coupled with steep reductions in the cost and availability of renewable energy, are causing oil to face a level of inter-fuel competition that would have seemed unfathomable a few years ago.

Changed underlying market conditions will naturally call for a different form of readjustment to the price drop than during previous market cycles. The usual market logic dictates that the deeper and faster a price decline, the stronger the recovery; conversely, the faster a rally, the more severe the inevitable correction. Recent market trends certainly fit the latter pattern: after years of sustained, record-high prices, a day of reckoning has arrived. But based on the analysis of this *Report*, the rebound

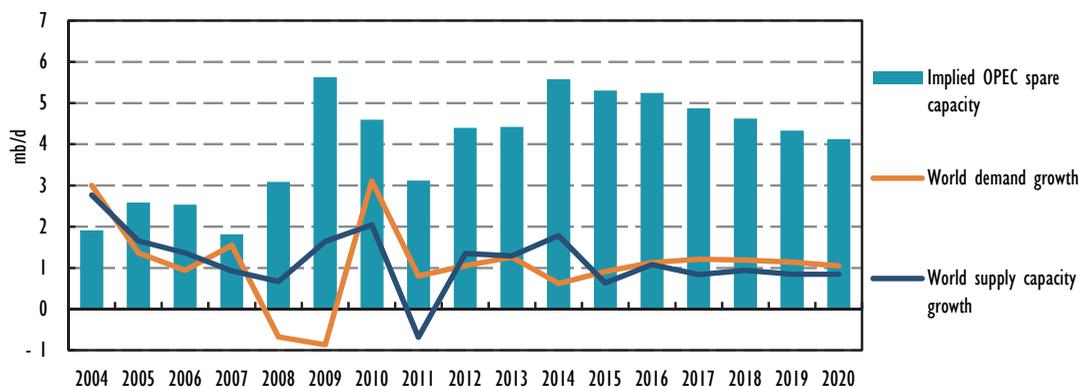
will be different, because non-OPEC supply has become far more price elastic than in the past, while demand has at the same time become significantly more price inelastic on the downside.

The result is that, barring any unexpected supply disruption or major, energy-related change in policy, the market rebalancing will likely occur relatively swiftly but will be comparatively limited in scope, with prices stabilising at levels higher than recent lows but substantially below the highs of the last three years. On current projections, the dramatic inventory build of the last few months grinds to a halt as early as mid-2015, and the market starts tightening appreciably, with a steady and gradual increase in the nominal Call on OPEC, from 2016 onwards. One of the consequences of the North American supply revolution is that the presumed high price-elasticity of North American LTO, which itself constitutes the single largest source by far of global incremental supply, will limit the usual overshooting and undershooting of market corrections both on the upside and the downside.

Another major takeaway from this *Report* is that the price decline, notwithstanding the sheer scope of the supply response it has already dictated, will not succeed in derailing the underlying forces in motion in the market or alter its expected course of development. If anything, pre-existing patterns will emerge reinforced from the adjustment. On the supply side, the top two sources of capacity growth identified in past editions of this *Report* – North America and Iraq – loom even larger by the end of the decade than previously expected. The price correction will cause the North American supply “party” to mark a pause; it will not bring it to an end. By the beginning of the next decade, the region’s non-conventional production will account for an even larger share of the supply mix than earlier forecast. While estimates of its production have been adjusted downwards, the region nevertheless still leads global supply growth by a wide margin by 2020, with forecast gains of 3.0 mb/d. Other sources of non-OPEC supply will be far more adversely affected by the price reset -- none more so than Russia, now projected to swing into contraction of more than 0.5 mb/d by 2020, down from an earlier projection of small growth.

And the formidable hurdles facing Iraq, including the twin challenges of an oil-price plunge and a vicious Islamic State in Iraq and Levant (ISIL) insurgency, have not succeeded so far in slowing its production growth, which by December 2014, defying expectations, had surged to a monthly average of 3.7 mb/d, a 35-year high. While the risks to the forecast are considerable, Iraq is seen as emerging from the price correction head and shoulders over its OPEC counterparts, with a larger production footprint than previously estimated, accounting for an even larger majority of OPEC incremental capacity than previously forecast (assuming international sanctions on Iran remain in place). Meanwhile, on the demand side, a projected slowdown in growth compared to the historic trends prevalent before the Great Recession is expected to remain on track despite lower prices.

Figure ES.1 Global oil balances, 2004-20



More than ever, caveats apply to this forecast. Political risk to supply will remain extraordinarily elevated in the next few years, both on the upside and the downside, after years of chronic disruptions in the oil-rich Middle East and North Africa region. Lower oil prices may indeed heighten the risk of political disturbances in countries where social spending requires high oil export and fiscal revenues and buffers are insufficient to make up for the shortfall, while territorial gains and activism by increasingly aggressive terrorist groups also pose a threat to supply, not least in Iraq. But lower prices can also offer upside risk to supply. For producer countries, lower export and fiscal revenues provide an incentive to maximise output and stimulate production growth, in a bid to make up in volume for per-barrel losses. Down cycles typically lead producer countries to tone down resource-nationalistic policies and thus can in some ways at least ease above-ground hurdles to supply. Iran also may be in a position to increase production and exports rapidly if it reached agreement over its nuclear program with the so-called P5+1, a possibility that is not this Report's assumption. Nevertheless, for the next few years, the global oil market looks set to begin a new chapter of its history, with markedly changing demand dynamics, sweeping shifts in crude trade and product supply, and dramatically different roles for OPEC and non OPEC producers in regulating upstream supply. That chapter will undoubtedly not be the final one, and the oil market and industry will keep reinventing themselves. But it will be profoundly different from anything that had been known so far.

Prices

After years of relatively stable, record-high prices, the oil market collapsed by roughly 60% from its June 2014 high above USD 115/bbl for front-month ICE Brent to below USD 46/bbl in January. NYMEX WTI saw similar declines. The drop came on the heels of a pronounced slowdown in demand growth – with year-on-year gains of just 0.3 mb/d in 2Q14, a near five-year low – and record advances in non-OPEC supply. It gained momentum around October, with Brent falling by more than USD 5/bbl in a single day, on 27 November, when OPEC surprised the market by keeping its production target unchanged in the face of falling revenues and rising non-OPEC supply. Prices dropped further still in December and through most of January, but in the latter part of the month appeared to stabilise before recovering to above USD 50/bbl in early February. As prompt prices fell, the futures curve shifted into a pronounced contango, a price structure where prompt supply trades at a discount to barrels for later delivery, usually indicative of a well-supplied, or even oversupplied, market.

Figure ES.2 Historical Brent crude oil prices

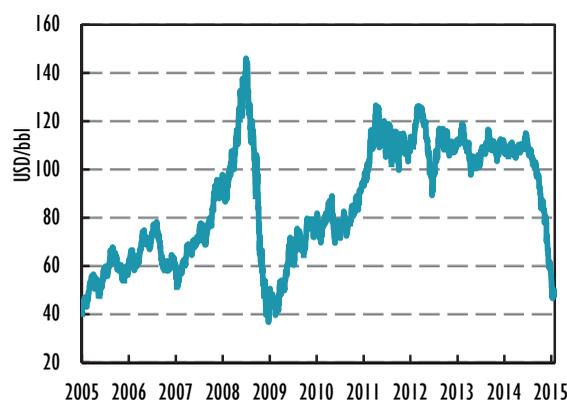
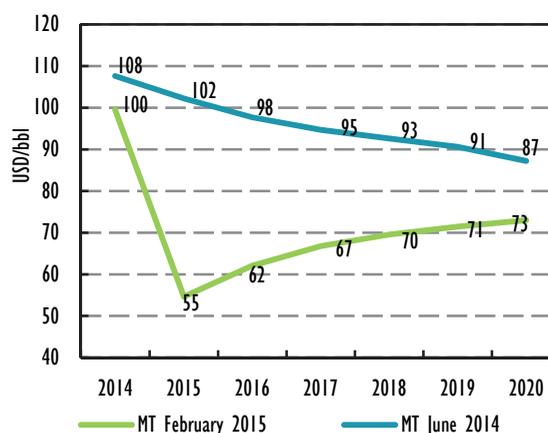


Figure ES.3 IEA import price assumptions



As with previous editions of this *Report*, the price *assumptions* (not forecasts) used as modelling input are derived from the futures curve. These averaged roughly USD 55/bbl for 2015, ramping up gradually to USD 73/bbl in 2020. These prices suggest that participants expect the market to recover somewhat as it rebalances following cuts in upstream investment. Despite that improvement, the market does not seem to be expecting prices to revisit earlier highs any time soon. Not only have prompt prices collapsed, even price expectations for the back end of the curve have been significantly downgraded.

The futures market's record as price forecaster is of course notoriously mixed. But future prices represent the level at which market participants can hedge today and as such can meaningfully affect investment and business decisions over the next business cycle. It is also the basis of the price assumptions used by the International Monetary Fund (IMF) in its forecasts of economic growth, which in turn are used as input in this *Report*.

Demand

The fact that lacklustre demand was part of the reason for the recent price collapse suggests that the selloff will only go so far in boosting economic growth and lifting oil demand. Indeed, the recent price decline is expected to have only a marginal impact on global demand growth for the remainder of the decade. Projections of oil-demand growth have been revised downwards, rather than upwards, since the price drop, in line with IMF forecasts of underlying economic growth; demand growth is expected to slow markedly, to 1.1 mb/d per annum over the next six years, from the "normal" pace of expansion exhibited prior to the financial crisis of 2008-2009.

As in previous editions of this *Report*, however, demand growth is still projected to gain momentum from recent lows as the global economy slowly improves, albeit more slowly than expected. Following cutbacks in upstream investment, it is now forecast to run ahead of supply gains by as much as 1 mb/d over the next six years, resulting in significantly tighter balances by the beginning of the next decade.

Oil exporting economies, which in recent years had been a driving force behind oil demand growth, will for the most part be adversely affected by the oil price drops, with the notable exception of Gulf Cooperation Council (GCC) countries with large enough buffers to absorb the impact of the revenue shortfall; Russia, where international sanctions will compound the effect of plummeting fiscal and export revenues, will be particularly hard hit. But the reverse might not be as true of oil-importing countries as would be expected. For most oil importers, the benefit of rising disposable income and lower production costs will be partly offset by underlying problems in the broader economy. In several large OECD economies, falling prices may feed into deflationary expectations, boosting savings ratios and in that sense exacerbating downward pressures on the economy. In many cases, weak currencies will blunt the impact of the decline in dollar-denominated oil prices, while governments rightfully take advantage of lower international oil prices to unwind costly subsidy programmes. End-users might not see as much relief from the drops as it would appear.

The fact that the global economy has become less oil-intensive than in the past, coupled with the diminishing role of oil in the fuel mix, will further mute the demand impact of lower prices. China's reorientation away from heavy manufacturing and exports towards a more consumer-driven economy puts a crimp on what had been the leading engine of global oil demand growth for the last 15 years. Beijing's efforts to fix its crippling air-pollution problems through efficiency gains and cleaner-burning fuels will add to the de-emphasis on export-driven industries and construction-led growth. In part

due to the legacy of years of sustained record-high oil prices, the world has become in general much less oil-intensive, and oil's place in the fuel mix is eroding. Mature OECD markets will see protracted contraction in oil demand in the years to 2020, extending earlier trends. But the rest of the world is no longer expected to provide as strong an offset as in the past. Renewables and natural gas are increasingly price-competitive against oil and coal in emerging markets and will continue to encroach – whether directly or indirectly – on oil consumption. Non-OECD oil demand is only expected to grow by 1.19 mb/d annually in the years to 2020, far less than its historical rate of growth.

Bunkers

Changing regulations for marine bunkers provide an example of how policy measures can undermine oil-demand growth at the margin even in the face of falling oil prices. The marine industry had long been one of the last strongholds of high-sulphur residual fuel oil (RFO) demand, but international regulations are catching up with the sector and the International Maritime Organisation (IMO) plans to lower sulphur emissions from marine bunkers as of 2020 (or 2025 if it opts to delay implementation).

The new rules will greatly lighten the quality of the global demand barrel as most shippers – but not all – are expected to switch from RFO to lower-sulphur marine gasoil to meet the tighter standards. Given the volumes involved, however, at least some shippers will have to adopt alternative options – including burning RFO with abatement technology (scrubbers) and switching to liquefied natural gas. Should all high-sulphur bunkers be replaced with marine gasoil, large new investments would be needed for the refining industry, on top of those already announced, to achieve the required changes in its product slate.

Supply

Supply-capacity growth looks significantly lower than expected in the years to 2020 as lower prices slash investments. Despite a plunge in oil prices of more than 50%, however, global capacity is still expected to increase to 103.2 mb/d over the next six years, a 5.2 mb/d gain. Two thirds of this growth will come from non-OPEC producers. Despite OPEC's stated policy of defending market share, its own crude capacity is only projected to gain 1.2 mb/d, an average of 200 kb/d per annum. Iraq alone accounts for almost all of the increment, as other producers curtail spending or struggle with low prices and security issues. Non-OPEC supply is forecast to reach 60 mb/d by 2020, with growth slowing to an average annual 570 kb/d. That growth rate is far below the record gains of 1.9 mb/d in 2014, and down from an average 1 mb/d in 2008-13.

Remarkably, US LTO is expected to remain a top source of incremental supply, with growth initially slowing to a trickle but swiftly regaining momentum later on, bringing production to a projected 5.2 mb/d by 2020. Although questions remain about the availability of capital to LTO producers on the rebound, on balance LTO investment cutbacks are not expected to have as long-lasting an impact as other spending cuts. Russia, facing a perfect storm of collapsing prices, international sanctions and currency depreciation, will likely emerge as the industry's top loser. Its production now looks set to contract by 560 kb/d from 2014 to 2020. Other cuts will target big-ticket items, such as high-cost deep-water projects in West Africa and elsewhere, as well as routine field maintenance as producers seek to squeeze as many barrels as possible from producing fields, resulting in faster decline rates later on. That will leave North American unconventional production looming even larger in total supply than previously thought.

Rising US LTO supply, another major factor behind the recent price drops, has often been described as a "game changer", including in earlier editions of this *Report*. But its transformative impact does

not derive just from the sheer production volumes it has unlocked, and which today have made it the world's top source of incremental supply. LTO also looks set to stand out by its responsiveness to lower prices. Its short lead and pay-back times, rapid well-level decline rates and treadmill-like investment requirements make it far more price elastic than conventional crude. Price declines have already caused the US LTO rig count to drop abruptly, setting the stage for a significantly faster supply response than would be typically expected from conventional crude producers.

OPEC's historic move to refrain from cutting production at its November 2014 meeting has thus turned LTO into a critical balancing factor. While it is not exactly unprecedented for the producer group to leave it to others to balance the market, one has to go as far back as 1986 for a prior and single example of such a move. An unexpected consequence of the North American supply revolution is thus to have effectively undercut, if not overturned, traditional OPEC and non-OPEC roles.

Biofuels

In addition to providing most of the world's new liquid hydrocarbon supply, the Americas also remain the leading source of renewable fuels, particularly ethanol. While lower oil prices may theoretically cause biofuels to grow less competitive against hydrocarbon fuels in mature markets, in practice production is expected to remain unaffected as biofuel consumption remains largely mandate-driven. Demand growth in the United States, Brazil and even the European Union appears to be running out of steam, but new mandates in Asia – largely a lagged legacy of years of record-high oil prices, growing oil-import bills and oil-subsidy costs – is picking up the slack. Indeed, world biofuel production is projected to rise slightly faster than previously expected, reaching 2.4 mb/d by 2020, up from roughly 2.2 mb/d in 2014.

Crude and product trade

Shifts in supply and demand dynamics may slow previously expected refinery trends and trade flows but will not cause them to materially change course. With LTO price elasticity keeping the United States firmly in its role as major provider of oil supply growth, North America will continue to source more of its crude locally, thus backing out seaborne imports, even as China – despite some significant scaling back – and the Middle East continue to ramp up refinery throughputs.

The net result of those upstream and downstream changes will be a continued shift of the global oil market from crude to products, with contraction and fragmentation in crude markets mirrored by expansion and globalisation in product markets. New forms of inter-dependence between oil exporters and importers will emerge. The hollowing out of the European refining industry amid growing competition from North America, India, China, Russia and the Middle East will leave Europe increasingly import-dependent for its middle-distillate needs – even as tightening sulphur standards for marine bunker fuels look set to dramatically boost those requirements. China and the Middle East, meanwhile, will become locked in a tightening embrace, but thanks to diminishing crude-import demand in North America and Europe, Asian buyers will enjoy unprecedented buying power as crude exporters will be forced to compete more aggressively in the same Asian markets.

Trends in the tanker industry will closely track those in crude and product markets. Most of the growth in the global tanker fleet will come from clean product tankers, including relatively large vessels designed to provide economies of scale in a market long confined to relatively short-haul trade and small ships. The average crude tanker is also getting larger in size as the average voyage grows longer, in a bid to make long-haul trade from the Atlantic Basin to Asia, which is on the rise, more economical.

Refining and product supply

Meanwhile the global refining industry continues to reinvent itself. Expansions continue, with capacity set to rise by 6.4 mb/d by 2020 to 102.1 mb/d, slightly more slowly than previously forecast, as China, in particular, scales back some projects in the face of weaker-than-expected domestic demand growth. Most of the capacity growth takes place east of Suez, with emerging Asia (including China) in the lead, followed by the Middle East.

Although refining capacity growth closely tracks demand growth, in practice excess refining capacity looks set to grow, as up to one third of incremental product demand is expected to be met by liquids that will bypass the refining system altogether such as natural gas liquids, biofuels, gas-to-liquids and coal-to-liquids. As such, refinery margins are expected to remain under pressure and further capacity rationalisation in mature markets looks inevitable, as product flows from new start-ups hit the market.