

# Qwest for Returns

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## Is Saudi oil production peaking?

There has been continuing debate about the Peak Oil Theory, based on the thesis that world oil production capacity will not be able to cope with increasing demand in the not too distant future.

If the Peak Oil Theory is correct, then one of the keys to the timing of a peak in global oil production is Saudi Arabia's production. Once Saudi capacity has peaked, there would be no realistic way to replace that many barrels of oil.

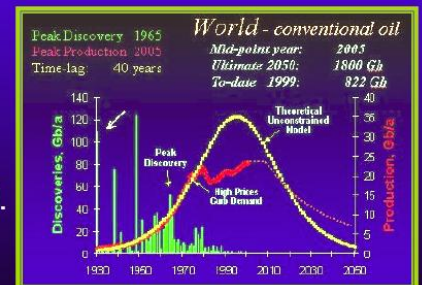
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*For investors, a peaking in Saudi oil production would undoubtedly have enormous repercussions that would reverberate around the world. It would also serve to underline our long-term bullish outlook for energy prices.*

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## Once Saudi Arabia Reaches Peak Oil, So Will The World

- On a sustainable basis, Saudi Arabia could have already passed peak output.
- If so, the world's oil supply (on sustained basis) has peaked.
- Peak oil is a world-class event.
- It is a crisis few understand.



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## Saudis struggling with production

Saudi production, in fact, may be peaking! WikiLeaks recently released a series of American diplomatic cables indicating that Saudi Arabia may not have the capacity to pump enough oil to keep a lid on prices. Indeed, independent verification, using Google Earth satellite imagery, shows that Saudi Aramco may be struggling to reach current production targets, implying that there is little excess capacity in Saudi Arabia.

For investors, a peak in Saudi oil production would undoubtedly have enormous repercussions that would reverberate around the world. Such a development would also serve to underline our long-term bullish outlook for energy prices. While we don't believe that oil prices will necessarily rise in a straight line, the combination of disruptions to supply and potentially higher marginal demand are likely to at least put a floor on oil prices should they weaken.

## What is the Peak Oil Theory?

The theory behind what is commonly known as "Peak Oil" is that global oil production cannot meet rising global demand. In fact, production capacity is expected to peak and begin to fall in the near future. When that happens, oil shortages will develop and skyrocketing oil prices will ensue.

The world is not running out of oil, but running into the Malthusian limits of extraction and production capacity. An important assumption behind Peak Oil is we are about to use up half of all of the extractable oil that there is in the ground. Once we hit that peak, production starts to fall. Meanwhile, world demand continues to rise, driven by industrialization and rising affluence in the developing world. When rising demand and falling supply meet, you get an energy shortage and rising prices.

The realization that there are limits to oil production growth would highlight to investors the scarcity of oil as an energy source, as well as create constraints on world growth.

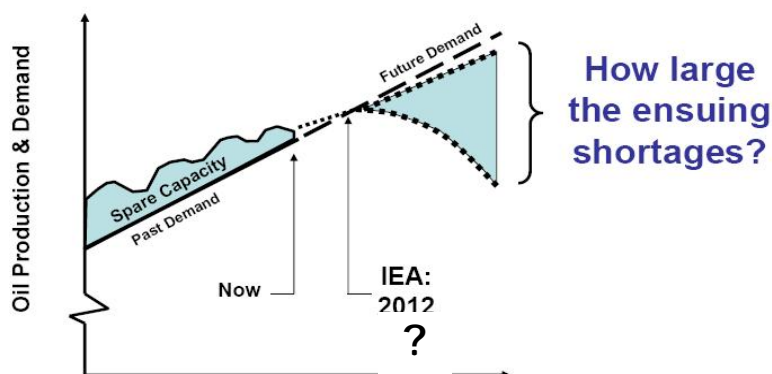
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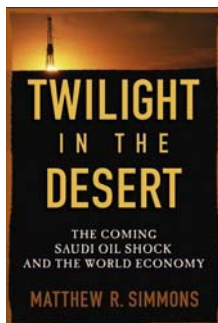
### World Spare Oil Production Capacity Will Not Meet Demand At Some Point

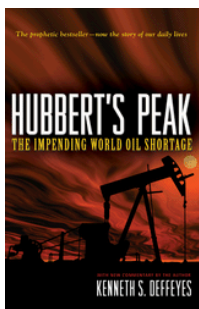
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## Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy

*Twilight in the Desert* (Mathew R. Simmons) reveals a Saudi oil and production industry that could soon approach a serious, irreversible decline. In this exhaustively researched book, veteran investment banker who became an oil industry analyst Matthew Simmons draws on his three-plus decades of insider experience and more than 200 independently produced reports about Saudi petroleum resources and production operations. He uncovered a story about Saudi Arabia's troubled oil industry, not to mention its political and social instability, which differs sharply from the globally accepted official version. It is a story that is provocative and disturbing, based on undeniable facts, but until now never told in its entirety. *Twilight in the Desert* answers all readers' questions about Saudi oil and production industries with keen examination instead of unsubstantiated posturing, and takes its place as one of the most important books of this still-young century.





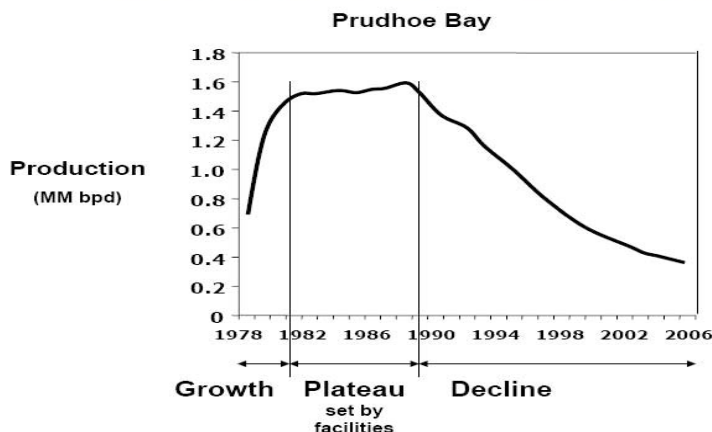
## Hubbert's Peak: The Impending World Oil Shortage

In 2001, Kenneth Deffeyes made a grim prediction. World oil production would reach a peak within the next decade - and there was nothing anyone could do to stop it. In the updated edition of *Hubbert's Peak*, Deffeyes explains the crisis that few now deny we are headed toward. Using geology and economics, he showed how everything from the rising price of groceries to the subprime mortgage crisis has been exacerbated by the shrinking supply and the growing price of oil. Although there is no easy solution to these problems, Deffeyes argues that the first step is understanding the trouble that we are in.

## Falling production = Need six Saudi Arabias to replace lost capacity

The chart below comes from Robert Hirsch, a leading energy analyst who co-authored *Peaking of World Oil Production: Impacts, Mitigation and Risk Management* in 2005 for the US Department of Energy. It shows the typical profile for an oil field. You turn on the taps and get a big ramp up in production, which is followed by a plateau and eventually by a slow decline until it is no longer profitable to keep the field running.

### Giant Oil Field Production History




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*The IEA's projects that the world needs to add six Saudi Arabias of oil production between now and 2030 to keep up with demand.*

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What many analysts have done is aggregate the data for all oil fields around the world and create a global cumulative oil production profile. The depletion rates come to 4-6% when you come to the down slope, and the figures are corroborated by various sources like the IEA.

That means a minimum of three million barrels of daily output is disappearing a year due to aging fields. In the meantime, new oil finds, that are due to come on stream, can't keep pace with lost production.

To understand what three million barrels a day really means, the oil industry is very excited about big finds such as Atlantis (Gulf of Mexico) and Plutonio (Angola). However, such fields are only expected to produce 220,000-240,000 barrels per day. For another perspective, consider that the mammoth Ghawar field (the world's largest) in Saudi Arabia produces 5 million barrels per day.

The IEA projects that *the world needs to add six Saudi Arabias of oil production* between now and 2030 to keep up with demand. Even if we were to make the brave assumption that demand was to stay flat until 2030, we would need to replace production equivalent to four Saudi Arabias!

## The Saudi risk to productive capacity

Matthew Simmons, author of *Twilight in the Desert*, wrote that the "IEA and EIA long-term supply models assume Saudi Arabian oil can double or triple in output to balance global oil demand", but "few observers have ever questioned the validity/risk of this key energy assumption." He went on to state what we know about the mystery of Saudi oil production:

- 5 extremely mature giant oilfields produce  $\approx$  90% of oil.
- 3 lesser giant oilfields produce another 7%.
- All are at risk of unplanned production collapse.
- None of "known facts" are verified by 3rd party audit or detailed field specific data.
- Last verified proven reserve assessment (1979):
  - 5 key oilfields had  $\approx$  70 billion barrels proven reserves.
  - Since then, 60 billion barrels have been produced.

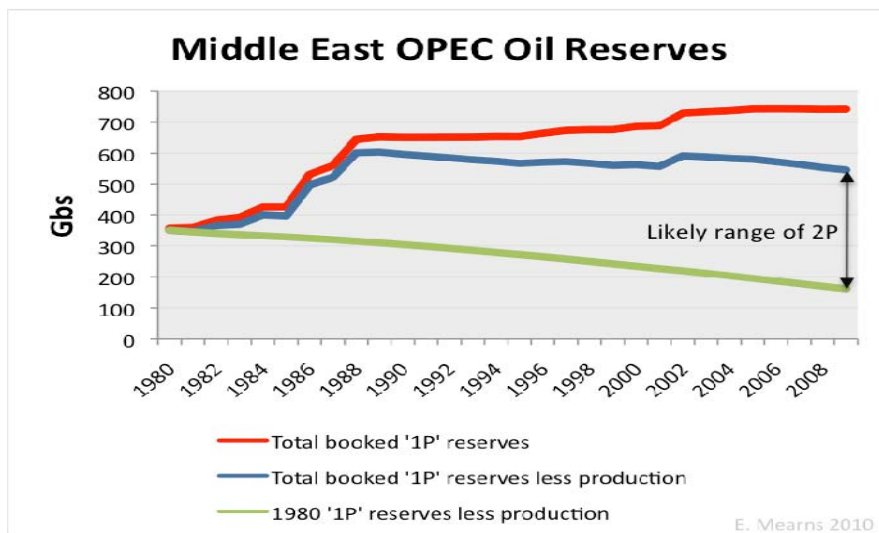
In 1979, Saudi Arabia took over management of Saudi Aramco, which is responsible for all production in the Kingdom. The company stopped reporting field by field reserve data. In the late 1980's the stated reserves of various OPEC members (including Saudi Arabia) doubled and tripled increases for political reasons: OPEC quotas were based on each country's stated reserves. At the time, analysts called the increase "paper barrels", but since then memory has faded and OPEC's stated reserves have been accepted at face value.

The chart below, from analyst Euan Mearns, shows why we are skeptical of Middle East OPEC (and Saudi) proven and probable reserves estimates. The bottom green line depicts oil reserve figures after production using the 1980 baseline of the Saudi takeover of Saudi Aramco. It assumes that there were no further discoveries or upward revisions because of improved technology. The blue line shows stated reserves after the stated revisions of paper barrels of the 1980's, after production adjustments. The red line is the official stated OPEC proven and probable reserves. Mearns went on to conclude that the likely actual reserves is somewhere between the green and blue lines, not the stated red line.

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*The risk is for the global economy is that if Saudi production capacity were to peak then there is no way to replace those barrels in the near term.*

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The risk for the global economy is that if Saudi production capacity were to peak, then there is no way to replace those barrels in the near term – and global growth runs on oil! While technology can serve to replace energy, history has taught us that it takes decades to ramp up new technologies. In the meantime, global growth could be severely impaired should supply be insufficient to meet demand.

## WikiLeaks reveals US skepticism about Saudi reserves and production capacity

On 8 February 2011, The Guardian\* published a series of WikiLeaks cables indicating that Saudi Arabia may not have the capacity to pump enough oil to keep a lid on prices. An American diplomat met with a senior Saudi government oil executive, Dr. Sadad al-Husseini:

Sadad al-Husseini, a geologist and former head of exploration at the Saudi oil monopoly Aramco, met the US consul general in Riyadh in November 2007 and told the US diplomat that Aramco's 12.5m barrel-a-day capacity needed to keep a lid on prices could not be reached.

According to the cables, which date between 2007-2009, Husseini said Saudi Arabia might reach an output of 12m barrels a day in 10 years but before then – possibly as early as 2012 – global oil production would have hit its highest point. This crunch point is known as "peak oil".

Husseini said that at that point Aramco would not be able to stop the rise of global oil prices because the Saudi energy industry had overstated its recoverable reserves to spur foreign investment. He argued that Aramco had badly underestimated the time needed to bring new oil on tap.

If we were to delve further into the diplomatic cables, we can see that in December 2007 American diplomats were skeptical about Saudi Arabia's ability to maintain production. The cable read:

According to al-Husseini, the crux of the issue is twofold. First, it is possible that Saudi reserves are not as bountiful as sometimes described and the timeline for their production not as unrestrained as Aramco executives and energy optimists would like to portray.

In a presentation, Abdallah al-Saif, current Aramco senior vice-president for exploration, reported that Aramco has 716bn barrels of total reserves, of which 51% are recoverable, and that in 20 years Aramco will have 900bn barrels of reserves.

Al-Husseini disagrees with this analysis, believing Aramco's reserves are overstated by as much as 300bn barrels. In his view once 50% of original proven reserves has been reached ... a steady output in decline will ensue and no amount of effort will be able to stop it. He believes that what will result is a plateau in total output that will last approximately 15 years followed by decreasing output.

Six months later, the US consul doubted if Saudi production could keep a lid on prices in another cable:

Our Mission now questions how much the Saudis can now substantively influence the crude markets over the long term. Clearly they can drive prices up, but we question whether they any longer have the power to drive prices down for a prolonged period. The May announcement of a 300,000 bpd increase in production barely dented price escalation. It appears unlikely Saudi Aramco could muster the million or more barrels which appear to be needed to make a dent in the normally upwards price trajectory. Saudi Aramco's ability to sustain such a production increase for a year or more raises serious questions.

\* See <http://www.guardian.co.uk/business/2011/feb/08/saudi-oil-reserves-overstated-wikileaks>

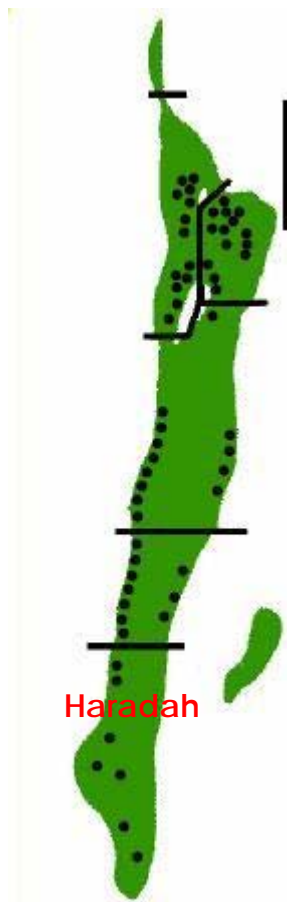
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*Our Mission now questions how much the Saudis can now substantively influence the crude markets over the long term.*

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## Are the Saudis running hard just to reach stated production targets?

### Ghawar Field




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*Matthew Simmons: "Once Saudi production passes peak output, then the world's supply has also peaked."*

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Saudi Aramco may indeed be struggling to reach stated production targets. The blogger "Satellite o'er the Desert", using Google Earth satellite imagery, found that Saudi Aramco was using 60% more wells than initial estimates at the southern Haradh section of Saudi Arabia's giant Ghawar field\* [emphasis added]:

The Haradh III development at the southern tip of the Ghawar oil field in Saudi Arabia, completed in 2006, has been portrayed by the national oil company Saudi Aramco as the turning point in the battle between geological adversity and engineering prowess. The poorest reservoir rock in Ghawar has succumbed to the latest in well and drilling technology. Aided by 3D Seismic images showing fracture locations, well sites were optimized and drills were guided by remote control from Dhahran. Smart completions were standard (did they ever call them "dumb" completions?), and something called an "iField" was set up. Maximum-reservoir-connectivity wells (MRCs) were fitted with monitoring electronics and valves on individual laterals such that they could be throttled back as needed to minimize water encroachment. Testing was done, adjustments were made as needed, and everything rolled out ahead of schedule. Goals for individual well productivity of 10,000 barrels/day were met, and projections indicated smooth sailing for ten years or more. Lots of glowing articles were published, and the man in charge eventually rode off in glory to solve the rest of the world's oil production problems.

Funny thing, though. *When you look at a satellite photo and count the number of producer wells they ended up drilling, it adds up to quite a few more than they have been claiming -- about 60% more.*

Haradh III was done using the latest technology. Estimates of producer wells should have been reasonably accurate. In fact, the former reservoir manager of the Haradh III boasted that [emphasis added]\*\*:

Against a backdrop of many international upstream projects straining to achieve their target production levels and intended plateaus, Haradh III reached its planned production capacity of 300,000 barrels per day well ahead of schedule, and the field's performance more than 18 months since its start-up exceeds virtually all pre-project goals...

The project took 21 months, and entailed construction of a grassroots surface-facility network, integrated with a complex sub-surface development program. Maximum Reservoir Contact (MRC) wells, smart completions, geo-steering, and the latest information technologies were part of Haradh III, at a scale and complexity unprecedented for Saudi Aramco and arguably, for the global upstream industry. *A decade from now, these will likely become standard in the lexicon of mega projects, providing much-needed supplies to the world markets.*

Perhaps there is an innocent explanation of why the well count is excessively high, but should production at the Ghawar be faltering, then it would likely spell trouble for global oil production.

In the words of Matthew Simmons, "Once Saudi production passes peak output, then the world's supply has also peaked."

\* See <http://satelliteoerthedesert.blogspot.com/2010/03/haradh-iii-development-at-southern-tip.html>

\*\* See <http://www.energytribune.com/articles.cfm?aid=627>

## Less supply = Bullish for energy prices

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*A peaking in Saudi oil production would undoubtedly have repercussions that reverberate around the world.*

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For investors, events may be converging to a “sweet spot” for energy prices. A peaking in Saudi oil production would undoubtedly have enormous repercussions that would reverberate around the world. It would also serve to underline our long-term bullish outlook for energy prices. While we don't believe that oil prices will necessarily rise in a straight line, the combination of disruptions to supply and potentially higher marginal demand are likely to at least put a floor on oil prices should they weaken.

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*People are our strength.  
Creating value is our  
goal.*

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### **About the Author**

*Cam Hui has been involved in the equity markets since 1980, both on the buy side and the sell side. Most recently, Cam was a Relative Value and Technical Research Analyst with Merrill Lynch in New York, New York. His comments on the markets can be found on his investment blog:*

*<http://humblestudentofthemarkets.blogspot.com>*

*Cam is a portfolio manager for Qwest Investment Fund Management Ltd., a subsidiary company of Qwest Investment Management Corp.*

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Qwest Investment Management Corp. ("Qwest") is an investment management firm which specializes in identifying emerging trend opportunities, managing merchant banking transactions, structuring investment products and providing portfolio management services in those sectors of the capital markets in which it has experience and expertise.

Qwest's management team brings a wealth of experience in corporate and financial product structuring, merchant banking and investment fund management. Qwest's executive and portfolio management teams possess the skills and experience necessary to evaluate and manage the risk and rewards inherent in those sectors of the global markets in which we participate.

Qwest is the parent company of Qwest Investment Fund Management Ltd., a company which provides portfolio advisor services for its various investment funds; and Heritage Bancorp Ltd., a company which provides administrative services for the Qwest group of companies.

## Portfolio Management Teams

Qwest's Vancouver and Calgary portfolio management teams are strategically situated to conduct in-depth research and analysis of those sectors in which they are focused.

### Vancouver-Based Portfolio Management Team

Our Vancouver-based portfolio management team, led by Mr. Cam Hui, brings a broad range of experience, knowledge and insight in the global financial markets. Cam has a diverse background in investment management, equity quantitative research and has experience in all phases of investment processes.

Prior to joining Qwest, Cam was a Relative Value and Technical Research Analyst with Merrill Lynch in New York. Prior to that, Cam was a portfolio manager with Graham Capital Management LLC and Batterymarch Financial Management, Inc. and finally, he held various positions while at Wood Gundy Inc. (now CIBC World Markets).

### Calgary-Based Portfolio Management Team

Our Calgary portfolio management team, led by Mr. Don Short, brings a broad range of experience, knowledge and insight, as well as a strong track record, in financing and investing in oil and gas and mining companies.

Prior to joining Qwest, Don was the portfolio manager for Origin Capital Management, a company he founded in 2006 which managed various oil and gas funds. Prior to this, Don held several positions in which he was: a principal at Core Partners Inc., a firm which provided business advisory services to small companies; an oil and gas research analyst at Raymond James Ltd.; an institutional sales and investment analyst at FirstEnergy; and an oil and gas business analyst for energy specialists Northridge Canada Inc.

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