



The Long-Term Outlook for Energy **By Fayez Sarofim & Co.**

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Executive Summary

Energy remains an attractive and critical industry from a secular perspective. The challenges of discovering, developing and delivering various sources of energy to end users continue to grow in complexity across geographic, geologic and geopolitical landscapes. We believe that the vital issues for investors to understand include:

- 1) Energy consumption will rise with population growth and living standards
- 2) Access, technology and capital are the key drivers of the energy industry
- 3) The existing production base faces accelerating decline rates
- 4) Alternatives do not have the scale to replace hydrocarbons in the intermediate term
- 5) Global Energy is under-represented in the equity markets and could gain share within the typical diversified portfolio

As the global population and standard of living continue to rise, energy consumption will increase significantly in the coming decades. Despite substantial efficiency gains, the U.S. accounts for 5% of the world population and about one-quarter of global energy demand. The other 95% of the world, particularly developing nations, is reaching levels of GDP per capita where historically energy consumption has sharply risen.

The basic fundamentals of the energy industry are driven by access to the resource base, technology and capital. Where all three tenets are present, such as U.S. natural gas, significant breakthroughs have occurred. In contrast, only 15% of the world's oil reserves are accessible outside of OPEC and the Former Soviet Union. Complicating matters, policy makers have favored cleaner burning natural gas and alternative forms of energy over crude oil, coal and nuclear energy.

The challenge of scale also remains formidable. We do not believe that the last five years of spending in an inflationary environment have corrected two decades of lackluster investment across many key areas of the energy value chain. The International Energy Agency (IEA) has suggested \$26 trillion of real spending will be needed between 2007 and 2030 to meet global energy requirements. We expect spare capacity of global energy resources to remain thin, with more frequent and more volatile cyclical imbalances underpinning a bullish secular trend for the industry.

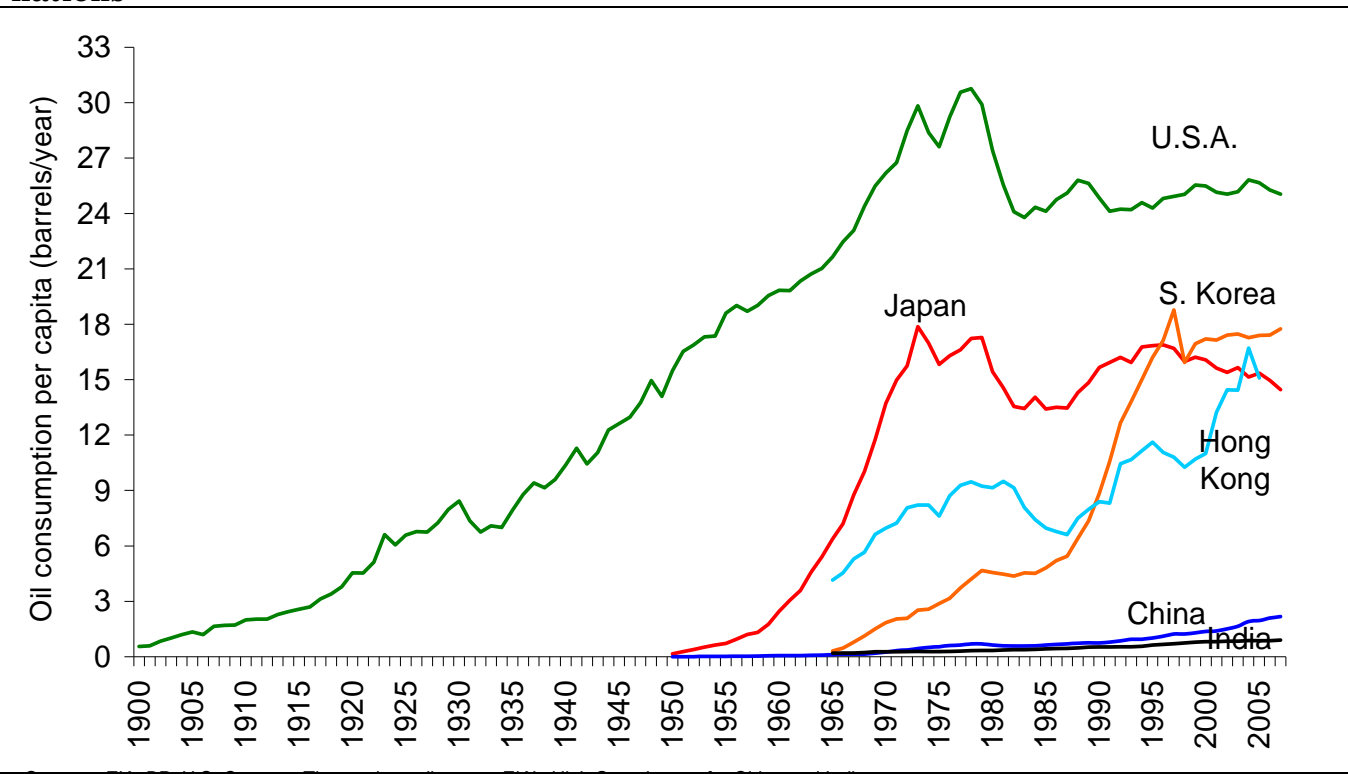
We believe that the road to solving the world's energy challenges is a long one. The industry is not well represented by equity markets as much of the value is held by governments around the world. In addition, many domestic indices are a poor reflection of global energy as almost \$1 trillion in publicly-traded market value is held in just a handful

of large foreign energy companies. We believe energy will remain an attractive investment opportunity within a diversified portfolio for many years to come.

Energy Demand Growth Will Be Fueled by the Next Billion Consumers

Despite significant improvements in energy efficiency over the last three decades, the United States population of 300 million consumes about one-quarter of all energy, roughly seven times the per capita consumption of the rest of the world. Today, many developing countries, notably China and India, are reaching levels of per capita GDP that have historically led to dramatic increases in oil consumption. Approximately 80% of the world's population is located in non-Organization for Economic Co-Operation and Development ("OECD") nations that are responsible for just 20% of the world's economic output. Of the world's 6.5 billion people, about two billion do not have electricity.

Exhibit 1: Oil consumption per capita has followed similar patterns in developing nations



Source: EIA, BP, U.S. Census; the lower two lines are EIA's high growth case for China & India.

We believe competition for oil resources will be a key economic and geopolitical issue in the next two decades. As opposed to prior cycles, the current rise in crude prices has been primarily demand driven. Although prices increased for seven consecutive years and spending rose four-fold, demand growth outpaced supply growth. Over the 1997-2007 period, demand grew 13 million barrels per day (MMB/d) against production growth of just 7 MMB/d, pushing OPEC capacity utilization from as low as 82% to as high as 96%.

Looking ahead, technology and efficiency gains are likely to keep OECD oil demand growth at tepid levels. In contrast, a Department of Energy (DOE) study suggests that non-OECD demand growth could be 2-3% annually with the potential to surpass OECD demand in about 20 years. Perhaps more importantly, non-OECD oil demand has now reached levels exceeding current OPEC production output.

Oil Supply Growth is Challenged By Old and Tired Fields

The most significant factor that will impact oil supply is the decline rate of existing base production. The IEA estimates declines on an aging base level of production are 6.7% in spite of ongoing maintenance levels of investment. In our example below, we use 5% for the decline rate on a supply base currently near 86 MMB/d. This means that 4.3 MMB/d of productive capacity must be replaced each year to maintain flat supply. This is equivalent to bringing online 43 new 100 KB/d fields per year in a world where fields of this size are becoming more difficult to find and develop. Stated another way, in ten years almost half of the current supply base will be depleted and must be replaced to meet a flat demand scenario.

Currently, over half of the world's oil supply comes from about 800 large, giant and super-giant fields, including more than 20% from the top 20 fields. According to Simmons & Company International, the remainder is produced from 70,000 fields that produce an average of 440 barrels per day. The vast majority of the world's giant oil fields were discovered before 1980. These giant fields are old and tired, with production in decline and few new giants to replace them.

Exhibit 2: World's Giant Fields are Aging and in Decline

| Field | Country | Location | Year of Discovery | Peak Annual Production | | 2007 Production |
|-----------------------|-----------------|----------|-------------------|------------------------|---------------|-----------------|
| | | | | Year | kb/d | kb/d |
| Ghawar | Saudi Arabia | Onshore | 1948 | 1980 | 5,588 | 5,100 |
| Cantarell | Mexico | Offshore | 1977 | 2003 | 2,054 | 1,675 |
| Safaniyah | Saudi Arabia | On/off | 1951 | 1998 | 2,128 | 1,408 |
| Rumaila N&S | Iraq | Onshore | 1953 | 1979 | 1,493 | 1,250 |
| Greater Burgan | Kuwait | Onshore | 1938 | 1972 | 2,415 | 1,170 |
| Samotlor | Russia | Onshore | 1960 | 1980 | 3,435 | 903 |
| Ahwaz | Iran | Onshore | 1958 | 1977 | 1,082 | 770 |
| Zakum | Abu Dhabi (UAE) | Offshore | 1964 | 1998 | 795 | 674 |
| Azeri-Chirag-Guneshli | Azerbaijan | Offshore | 1985 | 2007 | 658 | 658 |
| Priobskoye | Russia | Onshore | 1982 | 2007 | 652 | 652 |
| Top 10 Total | | | | | 20,300 | 14,260 |
| Top 20 Total | | | | | 30,240 | 19,163 |

Sources: IHS, Deloitte & Touche and USGS databases; IEA estimates and analysis

There is a prevalent theory that oil production may have peaked. Primary evidence cited includes the lack of new giant fields and production declines in several non-OPEC countries. However, we believe that capital, technology and access to resources could result in higher oil production. Over the past 40 years mankind has consumed nearly twice the world's known oil reserves in 1970. Today, proven oil reserves are nearly double what they were estimated to be in 1970.

The key problem is access. 76% of today's proven reserves are in OPEC nations with another 10% found in the Former Soviet Union. Shut out from exploring much of this resource base, the search for oil continues to move towards offshore, deepwater, harsh environments and areas where geopolitical risk is very high. This requires extraordinary capital, technology and ambition. In addition, the energy industry has an aging technical workforce that must be replaced and rebuilt over the next few decades.

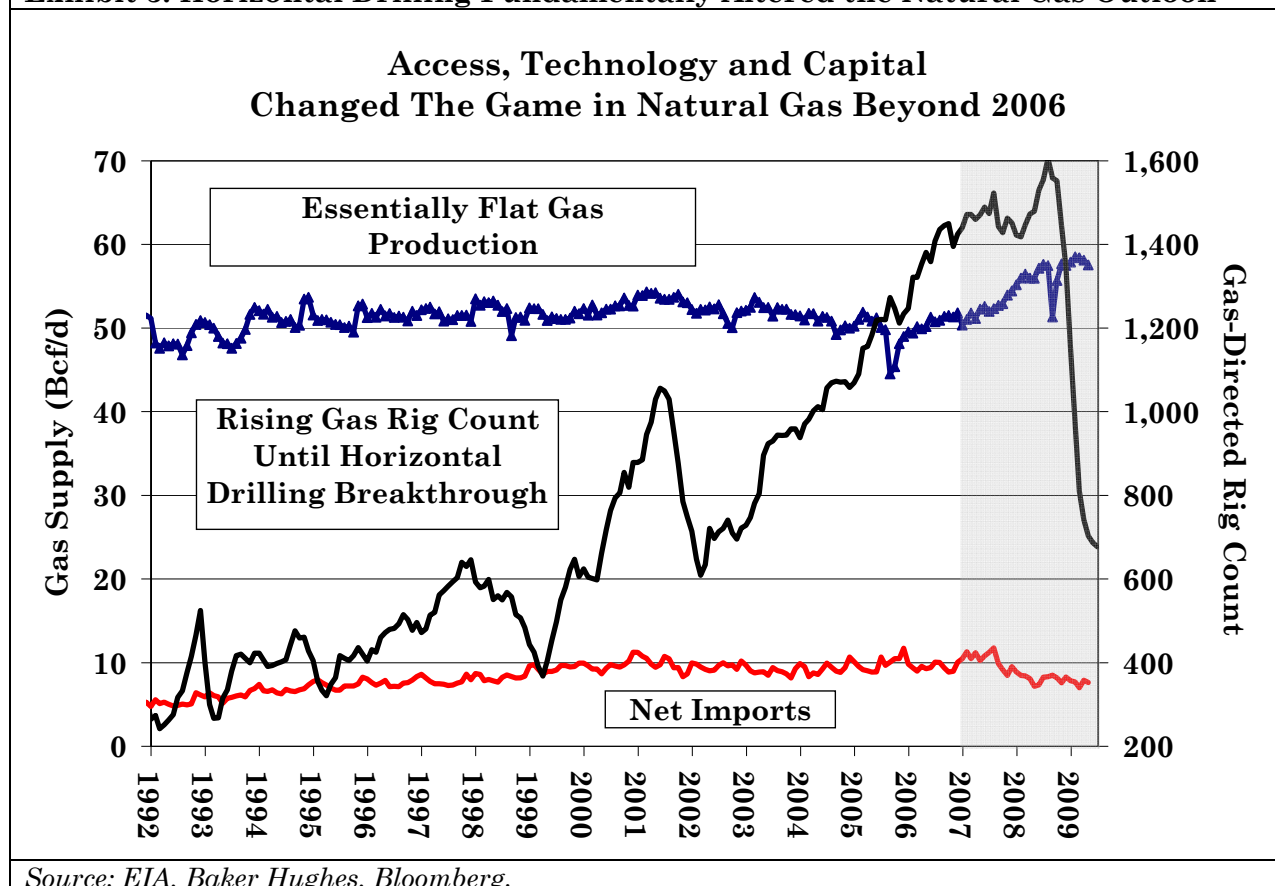
The large capital investments in the energy industry also require long lead times. It is now common for projects to average four to seven years from project sanction to startup. Projects funded in the 2004-2007 timeframe contributed to the inevitable cyclical supply and demand mismatch we have witnessed as demand declined in 2008 and 2009. With the extreme price volatility witnessed in the last two years, few new projects have been sanctioned. This could contribute to production shortfalls in the 2011-2013 period.

Access, Technology and Capital Have Altered Natural Gas Dynamics

In the 1990s, natural gas seemed cheap, clean and abundant. In Washington, our policy makers logically opted to support lower cost natural gas power plants closer to population centers. Over the course of a decade, U.S. demand for natural gas increased at a faster rate than that of coal and crude oil. That trend appears set to continue as policy makers favor clean burning natural gas over coal and nuclear energy.

Meanwhile, the supply side for natural gas faced an even greater challenge than crude oil in offsetting natural decline rates on the production base. These decline rates reached 30% per year from sources of new production. By 2007, a shocking 40% of all U.S. natural gas production came from wells drilled in the prior three years. Natural gas rig and well counts were climbing exponentially without increasing overall production levels.

Exhibit 3: Horizontal Drilling Fundamentally Altered the Natural Gas Outlook



In recent years, access, technology and capital have radically changed the perspective that the North American natural gas market would be eternally tight. New rigs were designed to drill up to two miles horizontally. New pressure pumping techniques were developed to

fracture tight and shale gas-bearing rock. Now more than half of wells drilled by industry leaders are horizontal with up to ten or more fracs per well. These technology breakthroughs together with ready access to acreage enabled massive new discoveries of natural gas in Texas, Louisiana, the Rocky Mountains, Pennsylvania, New Jersey and in British Columbia. In addition, initial flow rates and reserves per well have been higher than expected. However, the shale plays are young and the ultimate shape of the production profile curves is still unknown. These new plays might change the North American supply situation permanently or push out the long-term issues for a few years.

The attraction to clean natural gas is not just a North American phenomenon. Total natural gas demand in Europe is roughly similar to that of the United States. Like U.S. oil, European natural gas is subject to a high degree of imports and competition for supply from Asia. As a result, Europe is desperate to diversify its sources of natural gas away from Russia and a declining resource base in the North Sea.

Europe essentially has two ways to diversify its supply base. One will be the import of North American shale gas breakthroughs to areas including Hungary, Germany and Poland. The second and more immediate option is the import of liquefied natural gas (LNG).

LNG will play a pivotal supply role with the Middle East, West Africa and Australia serving as key resource holders. With better access, the major integrated oils became attracted to low cost, low decline rate natural gas and the ability to transport that gas to the highest paying global market. These significant projects should generate steady levels of production and large levels of free cash flow for decades to come. The leadership position in LNG is one of the most underappreciated aspects of the investment case for the major integrated oils.

Alternative Fuels Make a Marginal Impact

According to the DOE, if we converted all energy use including transportation and electricity generation to barrels of oil equivalent per day (boe/d), the United States consumed roughly 47 million boe/d in 2008. That volume consisted of 37% oil, 24% natural gas, 23% coal, 9% nuclear and 3% hydroelectric. Wind and solar power combined for 286,000 boe/d, which was just 0.6% of our total energy needs. If wind and solar consumption grow at 25% each year for ten years, the combined amount would total less than 6% of today's needs. Our view is that we need each and every form of energy to meet our challenges, but alternatives do not have the scale to replace hydrocarbons in the next 30 years.

In spite of subsidies, many ethanol producers were not able to escape bankruptcy in the downturn. In 2008, the U.S. became the largest producer of wind energy with consumption growing 51%. Solar energy consumption was only one-sixth that of wind power. Scale remains a considerable challenge for each of these alternatives. For example, a 2008 startup of an 8.22 megawatt solar plant in Alamosa, Colorado required 82 acres and serves 1,652 homes. A typical natural gas power plant needs about 40 acres to produce 1,000 megawatts and serve 200,000 homes.

Ultimately, we believe market share will be maintained by non-subsidized, economic sources of energy that have low cost inputs and clean burning outputs that can achieve scale, utilize existing infrastructure and do not compete with critical supply chains like food.

Where Could We Be Wrong?

Energy has been a volatile part of the macroeconomic equation for the majority of the last four decades. On the demand side, we strongly believe that growing prosperity and growing populations will result in growing energy demand. On the supply side, access, capital and technology are the most critical factors. While these drivers may have changed the outlook for natural gas, we have yet to experience similar changes in crude oil markets.

However, the market remains cyclical. Inevitably, supply tends to arrive when we need it least. After the most recent period of global economic growth, capital finally made an impact on supply just as demand was set to decline. We believe that spare capacity remains at a fairly low level that will be absorbed absent a prolonged and severe global economic downturn.

Today, we believe that excess productive oil capacity is about 4-6 MMB/d or about 5-7% of total oil demand. Therefore, in the worst recession since the end of World War II, the global petroleum complex is still operating at 93 to 95% capacity utilization. In 1985, OPEC also found itself with about 6 MMB/d of spare capacity, but worldwide demand was only 60 MMB/d. Soon after, Soviet demand fell from 8.6 MMB/d to 3.9 MMB/d in the 1990-1996 period. The combined result was over 15 years of slack in the system that was not eliminated until early this decade. A similar event today would require losing one-third of demand in the United States or almost all demand in China. Whether macroeconomic demand destruction or a step-change in alternative fuels, the history of the energy industry suggests that one should expect the unexpected.

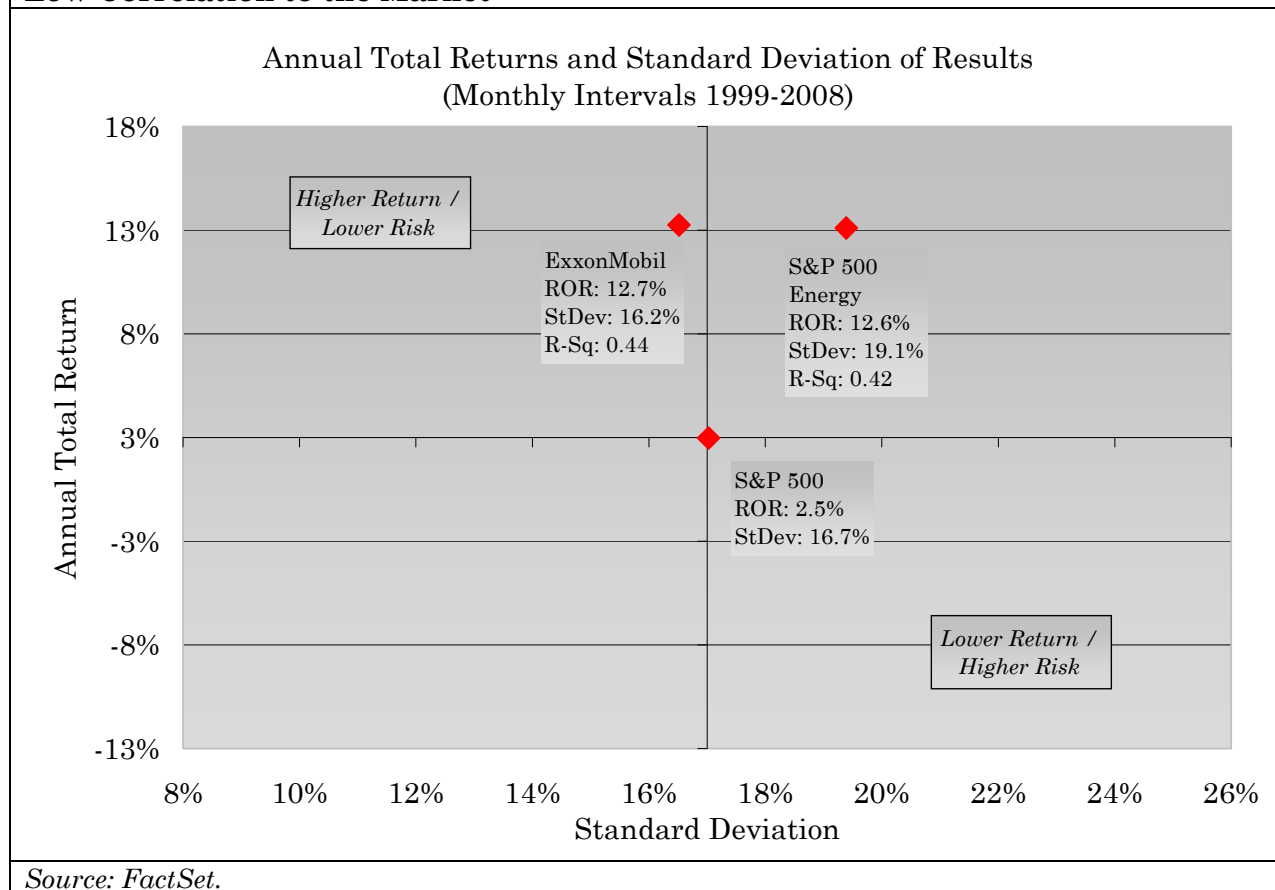
Manager Perspectives

For fifty years, Fayez Sarofim & Co. has held fast to a stated investment strategy: long-term stock price appreciation is predicated upon superior earnings growth resulting from dominant market positions in attractive industries. In a marketplace where the average stock is held for just months at a time, our lower turnover approach seeks to become owners of desirable businesses that compound value to the benefit of shareholders over long periods of time. We attempt to find the future profit pools and own the leading components of that particular industry profit pool.

We believe the challenges in supplying sufficient quantities of energy, let alone clean energy, to the world's population are significant and not well understood. This lack of understanding provides an opportunity to selectively overweight the energy sector in a diversified portfolio. In addition, we believe global energy is severely underrepresented in the average investment portfolio. Much of the industry's value is held by governments and unavailable to private investors. In the U.S., most domestic indices exclude roughly \$1 trillion of market value represented by large energy companies including Shell, Total, BP, Statoil, Gazprom, Petrobras and Petrochina.

Within our portfolio, we have balanced the risk of an overweight energy position by owning large integrated oils. These companies consistently bring capital, technology and management expertise to global markets for crude oil and low-cost natural gas. These companies generally maintain conservative balance sheets and offer superior returns on capital over the cyclical ups and downs common in the energy industry. The integrated oils have invested heavily in projects that offer longer and flatter production profiles and the generation of significant free cash flow. Over long periods of time, the integrated oils have demonstrated above average returns with the benefit of a low correlation with the broader market.

Exhibit 4: Energy Has Demonstrated Solid Returns and the Added Benefit of a Low Correlation to the Market



Similar to many of our diversified portfolio companies, the integrated oils have an excellent track record for returning cash flow to shareholders through dividends and share repurchases. As an investment manager interested in building wealth over the long run, we expect to benefit from the compounding capital appreciation and cash distributions derived from an overweight energy allocation for many years to come.

The views expressed herein are those of Fayed Sarofim & Co.'s investment professionals at the time the comments were made and may not be reflective of their current opinions and are subject to change without prior notice.