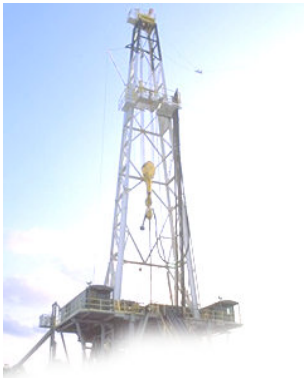


# Investment Outlook

## Oil Supply and Demand

Oil is a large and critical component of the world economy. The total value of all goods produced worldwide is about \$17 trillion annually. The total value of world crude oil production, at \$60 per barrel, is \$1.86 trillion annually. So crude oil represents 11% of the value of all goods produced. Oil is key to transportation and food production (fertilizers). Oil based plastics and coatings appear in a huge array of products. This issue of INVESTMENT OUTLOOK is devoted to Oil Supply and Demand over the next few years.



### Oil Supply

Where does oil come from? Seven steps need to occur.

1. Oil begins as marine algae in coastal basins.
2. Water currents need to carry the algae to the sea bottom.
3. The algae must be covered by sediment before the sea bottom bacteria have a chance to eat it.
4. Over the course of millions of years, the algae must be buried to a depth of at least 7,500 feet but not more than 15,000 feet. This is called the "oil window". Oil is only found between these specific depths. At less than 7,500 feet, the temperature will not reach the requisite 175 degrees needed to break down the algae molecules into crude oil. At more than 15,000 feet, algae breaks down too far and becomes methane. This is why oil and gas are commonly found together.
5. At these depths, there are no empty spaces for oil to pool. Rather, the oil resides within what is known as "reservoir rock". In order for the oil to flow, the reservoir rock must not soak up the oil, like shale does, and the rock granules must be large to allow flow space. Sandstone makes an ideal reservoir rock.

### Alternative: GTL diesel is an alternative fuel

GTL diesel is a natural gas-derived alternative fuel. It is not refined from crude oil but it is synthesized from ultra clean natural gas. Its efficient, premium, high-performance characteristics are fundamentally redefining environmental performance in terms of urban emissions and air quality. **GTL has less than 5 ppm Sulfur.** Current CARB standards which went into place June 2006 reduced sulfur content for diesel fuel sold in California to 15 ppm.

6. The reservoir rock must be continuous in order for one well to tap a large area.
7. The oil must be prevented from seeping to the surface. Oil is lighter than water, so oil naturally rises. Once it reaches the surface it is feasted upon by bacteria and the oil turns to tar. 90% of all oil ends up this way and that is why you have massive reserves of tar sands in the Athabasca Basin and the Orinoco Delta. In order to prevent seepage, the reservoir rock must be overlaid with non-permeable rock, in a dome structure to trap the oil. A billion barrel oilfield, seeping at one drop per second, will be completely depleted in 100 million years, which just happens to be the average age of earth's oilfields. The slightest seepage can ruin an oilfield.

Due to these rigorous conditions, oil is found on less than one tenth of one percent of the earth's surface. Oil geologists pretty much know where to look and what to look for, and they have been looking for a long time. **95% of all known oil reserves were discovered by 1965; the last 42 years have added only 5% to known reserves.**

In the mid 1950's, annual U.S. oil production was increasing, but a geologist named



Hubbert noted that the annual production compared to all cumulative prior production was declining year to year at a very regular rate. This allowed him to extrapolate that U.S. oil production would peak in 1970, and then decline at the same rate it had previously increased. Graphically speaking, **Hubbert predicted U.S. oil production would follow a bell shaped curve, with the peak at 1970. Subsequent history has proven Hubbert correct, although the peak turned out to be 1972.**

**Applying the same analysis to world production predicts a production peak in 2005.** There is a raging debate as to whether new technologies and rising prices can bring significant new reserves into production. The point to remember is that the largest oilfields, such as Ghawar in Saudi Arabia, were found and exploited years ago, are struggling to maintain current production, and will inevitably decline. Oil prices jumped in mid 2004, yet three years later world oil production remains pretty much flat.

It is true that the Alberta "oil sands", formerly known more accurately as "tar sands", contain more oil than all of Saudi Arabia. However, the sands must be heated in order to recover the oil and this requires a large input of natural gas. Wouldn't it be simpler just to run our cars on natural gas in the first place? The Alberta government recently halted any new oil sands projects because the infrastructure to support these massive projects is just not there. So the oil sands will take many years to ramp up, and may never de-

velop unless the developers can be assured of a steady supply of natural gas at stable prices.

## Oil Demand

Since the U.S. consumes 25% of the world's oil, let's begin by looking at the sensitivity of U.S. demand to gasoline prices. For most of us, the price of gasoline has very little effect on the amount of driving we do. We have seen a pickup in hybrid sales and a sharp falloff in SUV sales. 300 million Americans buy about 16 million cars per year. If every new car sold were a hybrid, it would take many years to replace our existing fleet. Many of us have done the math, and decided the savings in gas does not yet justify the extra cost of a hybrid. Furthermore, hybrid is at its best in stop and go traffic; on the open highway the mileage advantage disappears. Thus, our biggest gasoline consumers, folks who commute 100 highway miles each day, have no reason to buy hybrids.

Europe has had an oil import tax for years. As a result most Europeans use public transportation, and cars are smaller and more fuel efficient than in America. Since fuel economy is already widely practiced, it seems doubtful that higher prices can squeeze much more fuel efficiency out of Europe.

Most of the growth in oil demand is coming from China. That's old news. If you can remember back to your own youth, it's easy to understand why a car is one of the first purchases a Chinese or Indian person makes as their standard of living rises. What you may not know is that in the chaos of Chinese traffic, the driver with the largest vehicle usually claims the right of way.



In Luanda, Angola's capital, the vehicle traffic is so bad that one can travel about ten times as fast on foot, and the wait at the gas station is about two hours. Yet everyone who can afford a car drives instead of walking. It's all about social status, which is far more important to Luandans than saving time. SUV's and even Hummers continue to sell briskly.

## Conclusion

Oil suppliers are struggling to maintain current levels, because the most productive fields are past their prime, while newer oilfields are less productive and more expensive. Demand has shown little sensitivity to rising prices. Reductions in U.S. oil consumption will be more than offset by burgeoning demand in China, India and other developing countries.



The oil futures market has oil rising to \$66 over the next two years and very gradually decreasing to the low \$60's over the following two years, suggesting that current prices are here to stay.

If there is a recession because of expensive oil, oil will be one sector continuing to prosper. **At Balopole Investment Management Corporation we like oil as a hedge against an oil-induced recession.** We also like the supply/demand situation. Favorites include: Anadarko, the largest independent oil and gas exploration and production company; Valero, the largest U.S. oil refinery; and Sasol, the leading company in Gas-to-Liquids (GTL Diesel) and Coal-to-Liquids technology.

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Disclosure: The above investments may not be suitable for every investor. Robert Balopole owns each of these stocks.