

## Oil: Angel & Devil

Oil is the energy source on which modern life was built. When first exploited, it bubbled-up out of the ground by itself, free for the taking. Now we try to extract it from places like the bottom of the raging North Sea. It still is one of the easiest energy sources to collect, however. It transports and refines in large quantities, and it is so energy dense that the net energy yield is large. Oil refining is largely a distilling process, from which we get butane and propane (together known as Liquid Petroleum Gas or LPG), gasoline, diesel fuel, fuel oil (used in homes) and bunker oil (used in heavy manufacturing and large ships).<sup>ii</sup>

Oil was first used in 1859 to make kerosene, which was used in indoor lighting, replacing whale oil. It was on this use that Rockefeller built his Standard Oil empire, and oil companies have been among the most important and powerful American corporations ever since. Eventually gas, then electricity, replaced oil as a fuel for lighting, and in the 20<sup>th</sup> Century oil became the primary fuel for transportation. It also is used as a fuel for electrical generation, industrial processes, and heating both residences and commercial establishments.

After WWII world oil consumption skyrocketed, from about 300 MM tons<sup>i</sup> per year in 1940 to over 3,500 MM tons per year by 2000.<sup>ii</sup> Such skyrocketing demand has produced several alarms over potential oil shortages, but so far huge new discoveries and improvements in exploration, extraction, and refining have kept pace. As oil fields depleted and demand accelerated, it required larger and larger discoveries just to keep up. The discovery of giant oil fields peaked between the mid-1950s and the mid-1970s and since then has been following a declining trend. The mid-1970s represents the first oil crisis, after which prices declined. Nobody knows for sure if the decline in huge discoveries occurred because it was no longer profitable to bring new fields into production, but many fear that there simply weren't many left to be found. There are none in the U.S.; the Alaska National Wildlife Refuge, which has been so controversial is substantial, but not a giant.<sup>iii</sup>

U.S. oil consumption has risen from 11.5 million barrels per day in 1965 to 20.5 in 2006.<sup>iii</sup> The U.S accounts for about 24% of world consumption, a decrease from almost 37% in 1950.<sup>ii</sup> The decrease is because of cars, which have become more abundant around the world as economies have developed. There simply is no good alternative to oil derivatives as fuel for transportation. Some alternatives are too bulky, others require extreme temperatures or pressurization, others don't work well in small engines, others can't be obtained in sufficient quantities, and some aren't energy dense. The problem of oil is, thus, to a large extent a problem of cars.<sup>ii</sup>

The U.S. has more cars per capita than any other country. SUVs, vans, and pickups represented 51% of the cars purchased in 2002 (vs. 20% in 1980), and we drive them about 12,250 miles per year, vs. about 9,200 in 1980.<sup>ii</sup>

The oil picture, then, is one of decreasing supply in the face of increasing demand fueled by needlessly wasteful transportation practices. Market economies work best when supply is able to satisfy demand. When supply falls short of demand, even by small amounts, it often causes severe price shocks. The price of oil is more than six times what it was in 1998, and natural gas is more than five times the price in 1995.<sup>iii</sup> How high they will eventually go is unknown.

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<sup>i</sup> MM Tons = Million Metric Tons. A metric ton is about 2004 lbs.

<sup>ii</sup> Nersesian, Roy. (2007) *Energy for the 21<sup>st</sup> Century*, Armonk, NY: M.E. Sharpe.

<sup>iii</sup> Historical oil and natural gas prices from the *BP Statistical Review of World Energy, 2007*. Retrieved online 11/10/2007 at <http://www.bp.com/productlanding.do?categoryId=6848&contentId=7033471>. Current oil and natural gas price as of 4/5/2008 from Commodities and Currencies, *The Wall Street Journal*, April 5-6, 2008.