A CRUDE OUTLOOK ON OIL

“Oil is the single most important item traded between countries today. Ninety percent of the world's transportation runs on petroleum, and thousands of products - everything from drugs to detergents to fertilizers - are made from it. Less than 150 years after the world's first oil well was drilled on the shore of Oil Creek in Titusville, Pa., the global economy has been transformed. Now another huge transformation is on the way. The world's available petroleum supplies are going to run out. Like the ages of stone, bronze, and iron before it, the age of oil will expire” (Davy, 2005, p. 4). In order to maintain American culture and economy, the United States must diversify in its energy resources especially as it pertains to transportation.

There are two terms used to describe the most common types of energy sources: renewable fuels and fossil fuels. Oil, also called petroleum, is a fossil fuel, along with natural gas, coal and bitumens (tars). What Americans call crude oil is actually petroleum. Petroleum is not gasoline but rather gasoline is a refined petroleum product. Fossil fuels are derived from animal and plant decay that has been in the ground for thousands of years and is stored deep in the earth. Oil, as well as the other fossil fuels, is rich in hydrocarbons. This is the compound used as an energy source. Each fossil fuel must be processed to produce a pure hydrocarbon based form. For oil, this form is benzene, an aromatic, colorless, volatile, flammable and toxic liquid used in products such as detergents, insecticides, acne medication and motor fuel (both gasoline and oil).
Benzene is hydrocarbon compound C6H6. Even though this product is used in everyday life beyond just transportation, with “230 million registered vehicles in the U.S.A., two-thirds of the country’s crude oil consumption are transportation-related” (Loyal to oil, 2004, p. D.01). Oil is the predominant fuel used in American society. Annually, the U.S. gas and coal consumption combined is only slightly higher than that of oil consumption (Takin, 2005, p. 23).

<table>
<thead>
<tr>
<th>U.S. ENERGY DEMAND</th>
<th>TABLE 1</th>
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<tr>
<td></td>
<td>Change, % share of total energy-2004 2005 2004 2005*</td>
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<tr>
<td></td>
<td>Trillion btu -- 04/05 2004 2005*</td>
</tr>
<tr>
<td>Oil ................</td>
<td>40,130 40,970 2.1</td>
</tr>
<tr>
<td>Gas .............</td>
<td>23,096 23,430 1.4</td>
</tr>
<tr>
<td>Coal .............</td>
<td>22,390 22,900 2.3</td>
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<tr>
<td>Nuclear ........</td>
<td>8,232 8,200 -0.4</td>
</tr>
<tr>
<td>Hydro, other .</td>
<td>5,915 5,900 -0.3</td>
</tr>
<tr>
<td>TOTAL ...........</td>
<td>99,763 101,400 1.6</td>
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* Oil & Gas Journal estimate
Source: 2004 U.S. Energy Information Administration

Since the industrial revolution and the advent of the external combustion engine, or steam engine, Americans have been travel-happy. No other country has embraced motorized transportation like the American public. An external combustion engine needs someone to constantly feed the fire (imagine the old locomotive steam engines with men shoveling coal into furnaces). The internal combustion engine, however, is self-contained. Running on a piston system as well, an internal combustion engine uses gasoline, diesel fuel or natural gas to provide the pressure needed to make the engine run. This is where American dependence on oil and transportation converge.
The United States, ranked third in geographical size and population, is ranked number one in oil consumption worldwide. Our total oil use came to “20 mil barrels/d (mb/d) in 2005. The quantity accounts for roughly 25% of the world's oil production … an average American consumes 26 b/y of oil, three times as much as the European average. The per-capita oil consumption in China [the world’s second largest oil consumer] is 1.8 b/d, in India it is 0.9 b/d” (Oil consumption, 2005, p. 24). To put this into perspective think of the 191 nations that make up the UN. To share the pot evenly each nation could only use 0.5% and that’s not taking into consideration non-UN nations. But these nations are of different sizes and populations. China and India are ranked in the top five of the world’s largest nations. They are number one and two respectively in global population. So if oil is money, at $1,000 per day, the United States takes $250 of it, China uses about $80 worth and India would get $45. Letting the rest of the world fight over $620. The demand for oil will increase; the supply of oil, however, will decline. “Estimates vary. The United States Geological Survey says not for 30 years. The IEA expects it to happen anywhere between 2013 and 2037. The London Energy Institute says 2008” (Box, 2005, p. 36). Again putting this into the money analogy, by 2040 the world will only be producing $900 per day, yet China’s need will have doubled to approximately $160 per day and the U.S. will be demanding $350 as its share. India might ask for $90, leaving only $400 for the rest of the world, whose oil needs will have also increased. According to Davy:

U.S. government scientists put the amount of oil in the ground at about 2.6 trillion barrels. (One barrel is equal to 159 liters, or 42 gallons.) About 1.7 trillion barrels
are “discovered” oil (oil that geologists have found but not yet pumped out.) The remaining 900 billion barrels are “undiscovered” oil (oil that hasn't been found but that, theoretically, should be present in certain rock formations) … 2.6 trillion barrels might seem like a lot of oil, but not all of it is there for the taking … Once half the oil has been pumped out of the ground, the remaining half becomes harder and more expensive to extract. Production falls off and the field is eventually abandoned, leaving perhaps millions of barrels of oil in the ground and out of reach … [Also] the decline in oil production will not be the only problem. Drilling for new oil will also become much harder. As “easy oil” disappears, [industries] will have to tap remote regions such as the frozen tundra of Siberia and the 3-kilometer-deep floor of the Caspian Sea. (2005, p. 5)

Countries that can meet their own oil needs will be best off, and from where we stand now the United States is not among them. Thirty years ago one bushel of wheat could buy one barrel of oil. Today it takes nine bushels to buy one barrel. Because the United States is both the number one importer of oil and the number one exporter of wheat in the world, this “nine-fold rise … is driving the U.S. [into the largest] trade deficit in history, which in turn is raising external debt to record levels, [and] weakening the American economy” (Brown, 2004, p. 59). It has accounted for one of the greatest shifts in economic wealth in history. “In contrast, Saudi Arabia, the world's leading oil exporter and a high-ranking grain importer, is benefiting handsomely” (Brown, 2004, p. 59). But Saudi Arabia as well as Qatar and other developing Middle Eastern nations are becoming their own worst enemy as they become more dependent on oil to meet their
energy needs instead of investing in alternative technology to meet the future of oil extinction.

The United States does not solely depend on OPEC nations to meet its oil needs. In fact, the U.S.A. gets most of its oil imports from Canada and Mexico (15.6% & 15.5% respectively). Saudi Arabia provides 14.5%. Also the United States produces a third of its own oil needs. These figures were dramatically impacted however by hurricane Katrina which knocked out 92% of Mexico’s mining capacity and crippled oil refineries near New Orleans and Baton Rouge. The United States imports over 60% of its oil.

“Normally, refineries in Louisiana and Mississippi cover 30% of the U.S. oil consumption. Oil and gas mining in the Gulf of Mexico represent 2% of the global production. Consequent on the damage caused by hurricane Katrina, 6-10% of the U.S. refining capacities will be out of operation for a long time. The refineries near New Orleans and Baton Rouge dispose of capacities of 1 mb/d. Now nine of the 14 are not working” (Hurricane Katrina, 2005, p. 35).

If ever there was a time to get serious about boosting auto fuel efficiency, it is now. There are many steps that can be taken to reduce oil use with existing technologies. For example, new cars with hybrid gas-electric engines are being developed that are remarkably fuel-efficient. The annual sustainable-energy and transportation festival in Albany, NY, where “a student team from West Philadelphia High School took top honors with a purpose-built hybrid vehicle, which [used] biodiesel instead of gasoline and produced 77% less climate-change emissions compared to a conventional car [exhibited] over 60 hybrid, electric, and biofueled vehicles from throughout the U.S. and Canada that
demonstrated that the technology exists to power transportation systems with zero oil consumption and climate-change emission” (Anonymous, 2005, p. 7).

Oil is the number one fuel source used in United States. Worldwide the dependence on oil grows especially in developing nations like China and India. Oil is a finite product and its supply is waning. Even though experts vary on the exact date oil production will begin to decline, by 2040 oil dependence will be a thing of the past. In the face of oil decline, the U.S.A. would be wise to use our resources to develop and investigate the technologies we will need to keep our economy and our culture running for a long time.
REFERENCE LIST


Brown, Lester. (2004, July) The Saudis have America over a barrel. USA Today, 133 (2710), 59.


