We are on the verge of a major change in the way energy is produced, distributed, and used. More and more renewable and environmentally friendly fuels and energy conversion methods will become available. Use of most fossil fuels and particularly petroleum and solid coal will be reduced and ultimately phased out within a few decades.

Global solid and liquid fossil fuel consumption (coal and oil) was 3824 million tons of oil equivalent in 1970. This figure grew to 4894 million tons in 1980, 5212 million tons in 1990, 5287 million tons in 1995, 5360 million tons in 2000, and has since leveled off at an estimated 5680 million tons in 2006. More importantly, oil consumption reached 2968 million tons in 1990 and has since barely increased. In fact, global oil consumption has essentially been flat at 3069 to 3300 million tons between 1995 and 2006.

Natural gas consumption has leveled off at 2100–2300 million tons of oil equivalent. It appears that as shown in Table 10 not only did oil consumption reach a peak a few years ago but more importantly it contributes a declining percentage of fossil fuel consumption and an even more declining percentage of total energy consumption.

Even though wind and solar power contribute only a very small percentage of global electricity supply now, their contribution is growing at the rate of 20% per year. With very slow growth (2%/year) of global electric power demand, wind and solar energy are expected to contribute as much as 10% to the global electricity grid by 2020. Similarly, nuclear power generation has remained nearly constant over the last 10 years, while hydroelectric power generating capacity now at about 850 gigawatt is expected to grow to well over 1000 gigawatt by 2010 when the Three Gorges Dam in China (30 gigawatt) and other large new hydroelectric projects come on line.

Overall liquid and solid fossil fuel consumption in electric power generation has started a gradual decline. This trend is expected to accelerate and reduce total liquid and solid fossil fuel used in world electric power generation by about 20% within the next 20 years. Most of the reduction will be in oil, as clean coal technologies mature, and because coal is usually cheaper, more readily accessible and supply more secure. Similarly, use of liquid fossil fuel used in transportation will decline
both because of improved technology such as use of hybrid/electric cars as well as the introduction of hydrogen fueled cars using natural gas etc. for regeneration. Most experts agree today that a decline in global petroleum consumption is inevitable. This decline may be as little as 1% or as much as 3% per year after 2010. At the same time significant new petroleum supply sources (Russia, Central Asia, Deep Sea, Alaska, etc.) are expected to come on line. Efficient transport systems (pipeline, shipping, etc.) to the major European, North American, and East/Southeast Asian markets are already under development. It is expected that by 2010 global excess petroleum production (supply) capacity will have grown to 25% and by 2020 to over 40% above demand. In other words, excess supply will greatly exceed the combined capacity of all Persian Gulf producers.

While it may not significantly affect the world price of petroleum immediately, as many of the new suppliers are higher cost producers, they can all profitably deliver oil to world markets as long as the price per barrel remains above $40. Saudi Arabia and other Persian Gulf producers may then find themselves in a quagmire. They all need prices above $40/barrel to sustain their economies. However if the prices are kept at such a level, they would still be marginally profitable to higher cost producers, Western buyers will prefer purchasing from such more reliable and safer sources of supply. This particularly as many of the oil majors such as BP, Exxon-Mobil, Shell, etc. not only have large stakes in new sources of supply, but also because they control much of the refining, distribution and retailing business. Saudi Arabia as a result may find itself in a dilemma controlled by a restricted buyer market. This may force OPEC to reevaluate its production and pricing strategies. It may even result in the departure of some OPEC members from the cartel.

The global energy future and particularly the future of petroleum as the world’s principal fuel is expected to change radically as sources of supply of petroleum and other fuels become more diverse and alternative fuel and renewable energy technology advance. Although the U.S. did not accept or act on the Kyoto Protocol, American grass root organizations of environmentally concerned citizens are making an impact on U.S. policy and will influence both future policy as well as or more importantly manufacturers of energy conversion or producing technologies particularly in transport equipment or vehicles. As a result, we expect a gradual decline in U.S. petroleum consumption in U.S. electricity generation and transportation. As the U.S. and its transportation sector are the largest petroleum consumers, the effect will be acceleration in the decline of global petroleum consumption. The roles of major energy sources in global energy supply are projected and show the increasing contribution of alternative and/or renewable energy sources in electric power, building, transportation, and other energy uses. It shows clearly that the fossil fuel and particularly the petroleum age on our globe will be coming to an end. This may encourage a renaissance in human and economic development worldwide, and provide for a more equitable access to clean energy and thereby economic opportunity to all mankind.

This may be just in time as the ecological damage caused by 50 plus years of irresponsible use of fossil fuels, its finally showing devastating results in our