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perspective

Energy in the 21st century

World will have to rely on fossil fuels to renewables

By John D. "Jack" Edwards

High fuel prices are highlighting an inescapable truth: a sustainable future world energy supply is a must. If we plan ahead and begin making changes now, we can avert a looming energy supply crisis some analysts believe could occur as early as 2010.

It's been 20 years since the last giant oil field was discovered, and today most oil companies are enjoying record profits without making big investments in exploration and development of new resources. To meet projected world energy demand by 2030, the industry would need to invest more than \$100 billion annually in exploration and infrastructure, according to some estimates.



(NewsArt / John Overmyer)

Some experts believe as many as 2 trillion barrels of oil could be produced from oil shale deposits in Colorado, Utah and Wyoming - possibly more than exists in the Middle East. Investments in deposits in western U.S. oil shales, Canadian tar sands and Venezuelan heavy oil already have begun.

Demand is outstripping supply in all aspects of the energy industry. Fossil fuels - oil, coal and natural gas - supply 85 percent of global energy. Oil, the single largest fuel used today, provides 40 percent of the world's energy demand.

Oil drilling costs have increased in recent years, and nearly all the world's usable drilling rigs are in use. Worldwide, there is not enough infrastructure to produce, transport and deliver more crude. The U.S. capacity to refine crude oil was stretched to its limit before this year's damaging hurricanes, and is now even more strained. That reduced refining capacity adds to the cost of oil and to the cost of getting gasoline to consumers. Exploration for and production of domestic crude oil are decreasing, but foreign competition for energy is on the rise. The U.S. consumes 25 percent of the world's total oil production, and China will soon consume more oil per capita. International oil prices are affected by future oil demand, particularly for light crude oil, which is easier to refine. Demand for oil is increasing as populations and developing economies expand. China's economy is growing at a rate of 9 percent, India's at 6 percent and the United States' at 4 percent.

Taxes on crude oil and gasoline also put economic pressure on the price of oil, which is compounded by the declining purchasing power of the dollar and economic uncertainty bred by the Iraq War.

When oil supplies do begin to decline, a global energy supply gap could lead to an energy crisis unless people begin to prepare now. When peak global oil production is reached, the price of oil will rise as energy demand continues to grow. People will be forced to use less fuel and to use it more efficiently.

In 1956, M. King Hubbert, a Shell Oil research geologist, predicted U.S. domestic oil production would peak in 1970 and then decline. He was right. Today, pessimists predict world oil production will peak by 2010. Optimists, including myself, cite unconventional Canadian tar sands, western U.S. shale oil and Venezuelan heavy oil as providing extra resources that will extend the peak of world oil production to 2030 or 2040. After that, it is inevitable that oil production will decline.

I believe world oil production will peak between 2020 and 2040, and the United States' only way out of this fossil fuel "bear trap" is to encourage increased use of sustainable, alternative less-polluting fuels. These fuels, in order of economic viability, include: hydrogen fuel cells, nuclear, wind, coal bed methane, solar, biomass, geothermal and hydroelectric.

Development of economically attractive alternatives to gasoline continues, although alternatives still comprise less than 15 percent of the world's energy supply. Spurred by necessity, production and marketing of convenient, competitively priced, renewable energy will become profitable during the next several decades.

Government and industry must expand efforts now to accelerate the transition from fossil fuels to renewable, less-polluting energy sources. More tax breaks from the government would encourage the transition by improving the economics of alternative energy sources. Reducing atmospheric pollution, a major international concern, is an added incentive for limiting fossil fuel use and quickening the pace of change to renewable energy sources.

Continuous technology improvements, cost reductions, increases in efficiency of energy production and use - along with energy conservation - will enable renewable, less-polluting sources to dominate energy supplies in the next century.

But we must act now.