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Editorial

Energy, whether derived from coal, natural gas, oil, uranium, or renewable sources, is one of the foundations for improving the living standards of the expanding world population. It is also essential for a sustained economic growth. In 2013, about 87 percent of the energy that the world consumed came from fossil fuels, a figure that remarkably was unchanged for the past ten years. The fuels roughly divide into three categories of use: oil used mainly for transportation, natural gas mainly for heating and coal mainly for generation of electricity.

Coal is the most abundant and economic fossil fuel in the world today. It comprises about 80 percent of all fuel reserves. Total proven world coal reserves exceed one trillion tons and indicated reserves (mostly too deep to mine with current technology- but, think shale gas) range from 17 to 30 trillion tons. Coal is mined in sixty countries around the world that produce nearly 8000 million tons of coal per year.

Regarding oil and gas, the argument that these fossil fuels will soon run out has become moot. The shale revolution, has found USA at the top of the energy producing league, rivaling Saudi Arabia in oil and Russia in natural gas. And the shale revolution has yet to go global. The oil and gas in tight rock formations and deep coal seams will give the world ample supplies of these hydrocarbons for decades if not centuries.

Renewable energy sources, such as wind and solar, have contributed hardly at all to the drop in carbon emissions. Wind power, for all the public money spent on its expansion, has inched up to one percent of world energy consumption in 2013. Solar, also with public money support, and if rounded to the nearest whole number, accounts for 0 percent of world energy consumption. In general, the renewables take up too much space and produce too little energy and are unreliable.

Fossil fuels have also contributed to preserving the planet earth. The use of coal has halted and then reversed the deforestation of Europe and North America and can do the same for South America, Africa and Southeast Asia. The turn to oil has halted the slaughter of the world's whales and seals. Fertilizer manufactured with gas has halved the amount needed to produce food, thus feeding a growing world population and sparing the land for nature.

Since renewables are unreliable, the world will have to depend on fossil fuels for energy in the foreseeable future. Since oil and natural gas are preferred forms of energy at the present time, it behooves us to convert our largest energy resource, namely coal, into gas and liquid fuels. Modern conversion process can produce two barrels (84 gallons) of diesel fuel per ton of coal and compete with the current price of crude, about \$45.00 per barrel. Coal also contains gas, methane gas. Global reserves of this coal seam gas are estimated to be 35,000 TCF as compared to US natural gas reserves of about 1000 TCF. These coal seam gas reserves can be developed using the technology currently used to produce natural gas from shales. The potential for coal seam gas as an energy source, both in the US and globally, is unlimited.

Comparison of Sources of Electricity Generation in the USA; 2005 vs.2015

According to US Energy Information Administration, sources of US electricity generation, in million megawatt hours, in the first quarter of 2005 vs. first quarter of 2015 were as follows:

	1Q2005	1Q2015
Coal	496.4	368.5
Natural gas	148.1	291.2
Nuclear	192.3	202.3
Hydroelectric	68.8	71.7
Wind	3.7	45.6
Other	49.7	40.6

(Note: Other includes solar, petroleum, biomass and geothermal).

According to the administration, the trend of decreasing reliance on older coal plants and increasing power generation from natural gas, nuclear power and wind turbines will continue in the near future.(The Wall Street Journal,

August 3, 2015 p. A 1,4)

Costs Associated with Implementation of Clean Power Plan (CPP)

A recent study Institute of Energy Research (IER) and based on the data from EIA and FERC shows that the existing nuclear plants generate electricity, on average, at \$29.60 per megawatt hour (MW-hr); existing hydroelectric plants at \$34.20/MW-hr; coal plants at \$38.40/MW-hr and existing natural gas plants \$48.90/MW-hr. The costs for new natural gas plants averaged \$73.40/MW-hr., almost twice as expensive as existing coal plants. Replacing coal with renewable sources is even more expensive. Installing and operating new wind facilities would cost

\$106.80/MW-hr. Wind and solar provide about 5 percent of US electricity today. Renewables should be called unreliable, since when the wind isn't blowing and the sun isn't shining they require reliable sources such as fossil fuels as backups.

(Coal Age August 2015 p, 2)

Global Warming I

The world has certainly warmed up since the 19th century, but the rate of warming has been erratic There have been no dramatic increase in the frequency or severity of storms or droughts, no acceleration of sea level rise. Arctic sea ice has decreased but Antarctic sea ice has increased. The warming of the earth surface has not increased two to four degrees Celsius over a century. Over the past thirty five years the warming rate has never reached even two tenth of a degree per decade and has slowed down to virtually nothing in the past 15 to 20 years. Unfortunately, the Intergovernment Panel on Climate Change (IPCC) continues to use the two to four degrees standard for their mathematical models for climate predictions. (AAPL Landman May/June 2015, pp 24-27).

Global Warming II

Writings on the walls of Dayu Cave in the Qinling Mountains of China record the effects of droughts over hundreds of years. One inscription, dated 1528, reads "Drought occurred in the 7th year of the Emperor Jiajing period, Ming Dynasty, Gui Jiang and Sishan Jiang came to Da'an town to acknowledge the Dragon Lake inside in Dayu Cave." Researchers at the University of Cambridge and elsewhere also analyzed stalagmites in the cave, which contain rings that record their growth. With this information, the researchers constructed a model of precipitation in the region in more recent times, which predicts another drought in the late 2030s. (New York Times August 18, 2015 p. D4).

(Ihor Havryluk-Managing Editor)