Energy Geopolitics

Michael J. Economides

Cullen College of Engineering, University of Houston, Houston, TX 77204-4007

ABSTRACT

Energy has become a strategic factor in global geopolitics. It is a key to national power as well as a major requirement for economic growth.

There is no question that at the start of the current millennium energy consumption has become the most discernible national characteristic that separates rich from poor countries. The United States, the richest nation in the group, also is one of the most intense users of energy.

The energy use in other developed countries while also well correlated with their wealth is also a function of their geography, the makeup of the countries and even the tastes and preferences of their denizens. China and India, by far the world's most populous nations, languish considerably behind in both *per capita* incomes and *per capita* energy consumptions. Both of these two nations want to catch up with the developed world and, unavoidably, they will have to move up the curve. This may prove perhaps the most formidable international challenge of the twenty-first century.

There is a substantial imbalance in the location of energy producers and consumers, an imbalance that has precipitated world conflicts and one that will likely cause future upheavals. Prominent among these areas is the Middle East where five of the six countries with 75 billion barrels of reserves are located. The Straits of Hormuz through which one third of all oil world trade passes is a geopolitical choke point. Russia, a bright spot in energy production in the last several years has become problematic recently with major internal fractures emerging. Other areas such as Venezuela, Nigeria and Indonesia have also caused or are causing difficulties in their ability to deliver oil.

One obvious bright spot for the future is that energy consumption in the generation of wealth and the form of primary energy sources have not been constant throughout the last two centuries. Instead, the process has been dynamic, technology has played a considerable role and nations have and will "leap frog" in status by adopting technologies and efficiencies developed elsewhere, without having to repeat painful processes in pioneering nations such as the United Kingdom and the United States. Globalization of the economy will certainly aid the process further. Of considerable significance is the change of fuels from wood to coal to oil and now to natural gas and, eventually, to hydrogen. The decarbonization of fuels is an extraordinary evolutionary process and natural gas is viewed as the compelling next fuel of choice worldwide and as a necessary stepping-stone towards hydrogen.