

Summary of Hydrocarbon White Papers

Hydrocarbons have provided the energy upon which our modern lifestyle is based. Oil, because it packs huge amounts of energy into little volume, has been the fuel of choice for transportation. Coal is the dirtiest hydrocarbon. But because it is plentiful, cheap, and transportable, it is widely used for electrical generation and in some large industrial plants. Natural gas, because it is clean burning, is a desirable fuel for many industrial, commercial, and residential uses. However, because it is difficult to transport without a pipeline, other fuels are often used.

Many believe that oil supplies are beginning to be outstripped by oil demand. It has become increasingly difficult to discover the huge new oil reserves necessary to replace declining oilfield output and meet increasing demand. Supplies of natural gas are less tight. There is hope that we will be able to develop large new sources of natural gas, but it is far from a foregone conclusion. Coal reserves are sufficient to last for many years, but are problematic to develop and use.

Coal can be converted to liquid and gaseous fuels. Liquid synfuel is one possible replacement for oil. Doing so may reduce, but it does not solve the pollution problems associated with coal, and would result in a worsening of global warming. Hydrocarbon use and global warming are two sides of the same coin.

As energy becomes more expensive, it will spur exploration for new reserves and encourage development of new processes. All of this is capital intensive, however. Energy prices have historically been volatile, and price volatility discourages large capital investment. A coherent energy policy will be needed that provides the stability and consistent direction needed for such large capital projects.

Unless unexpected huge energy reserves are discovered, we are entering a world of higher energy prices—how much higher cannot be reliably predicted. A variety of alternative hydrocarbon sources have been discussed in previous white papers. Many of them were worth pursuing, but all were problematic in one way or another. Our way of life is colliding with the looming scarcity of hydrocarbons and with global warming. I don't think we can avoid this collision at this point. The best strategies involve conservation and increased efficiency. The difference between conservation and efficiency can be illustrated this way: conservation means driving fewer miles, efficiency means driving a car that gets better mileage.

The opportunity should be taken here to point back to the first white paper. There we said that three fundamental factors lie behind all sustainability problems: population growth, high living standards, and the fact that sustainability was an economic externality. These three factors can all be seen at work in hydrocarbons. The high demand for hydrocarbons is linked to high population levels and to increasing standards of living around the world. Wasteful practices are encouraged because the true costs of using hydrocarbons—global warming, disease and environmental degradation caused by pollution—are not internalized in the cost of purchasing them. If these costs were internalized, hydrocarbons would be much more expensive, which would lead to less use, the development of alternatives, and greater efficiency.