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We've been told the world is running out of sources of energy, and we've been preached to about renewables and made to spend vast sums on them. In fact energy is the third of my sources of optimism.

3. Energy

The oil, we are told, is running out, and they talk of 'peak oil.' There are vast reserves of coal, but it pollutes more than we want, so the talk turns to renewables. Biofuel from food grains lacks all sense or reason. The farmers loved it, of course, and so probably did the politicians who collected their votes. Poorer people who had to compete with Chelsea tractors for cheap food were less pleased.

Wind farms have blighted our areas of natural beauty, are very expensive, and may not even contribute to environmental quality when their whole life pollution, including construction, is factored in. Moreover there has to be back-up power for when winds prove unreliable.

Renewables are jacking up the fuel bills that customers complain of, despite their tiny contribution to total energy supply. The big change to the equation has been the natural gas revolution, with hydraulic fracturing technology giving us access to reserves we knew about but could not previously tap. We now have many decades, maybe hundreds of years, of reserve supplies. And those reserves are not in politically sensitive or unstable areas.

Gas does emit carbon, but half that of the coal-fired power stations it can replace. It is what will fuel our power stations. It can even substitute for oil in transport if we move to electric vehicles using gas-generated electricity. It is a fossil fuel, of course, but not in short supply.

Coming close on its heels is photo-voltaic power, with the price of the cells subject to a kind of Moore's Law that sees the prices tumbling steadily over the years. Technology has thus already shown us the solution to the energy shortage. Environmentalists oppose this solution, of course, because it does not necessitate the behavioural changes that they seek.

Note that a US coal-fired plant converts only about 33% of the potential energy to power. An incandescent light-bulb is only about 3% efficient. This makes coal to incandescent light only 1% efficient. By contrast an LED powered by gas-generated electricity is 20% efficient ? twenty times as much. Technology like this is solving the problem.

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