

## Green Energy: A Bubble in Unrealistic Expectations, Part II

*“By a continuing process of inflation, governments can confiscate, secretly and unobserved, an important part of the wealth of its citizens.”*

– John Maynard Keynes (an interesting observation for all the modern day Keynesians to consider given their support of current inflationary US policies, including energy-related)

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### Introduction

This is part two of our discourse regarding green energy and its profound – and somewhat misunderstood – impact on the global economy. In this issue, we specifically home in on China and how that country’s immense power needs are affecting the energy ecosystem at large.

### Summary

- About 70% of China’s electricity is generated by coal, which has major environmental ramifications in regards to electric vehicles.
- Because of enormous energy demand in China this year, coal prices have experienced a massive boom. Its usage was up 15% in the first half of this year, and the Chinese government has instructed power providers to obtain all baseload energy sources, regardless of cost.
- The massive migration to electric vehicles – and the fact that they use six times the amount of critical minerals as their gasoline-powered counterparts – means demand for these precious resources is expected to skyrocket.
- This extreme need for rare minerals, combined with rapid demand growth, is a recipe for a major spike in prices.
- Massively expanding the US electrical grid has several daunting challenges– chief among them the fact that the American public is extremely reluctant to have new transmission lines installed in their area.
- The state of California continues to blaze the trail for green energy in terms of both scope and speed. How the rest of the country responds to their aggressive take on renewables remains to be seen.
- It appears we are entering a very odd reality: governments are expending resources they do not have on weakly concentrated energy. And the result may be very detrimental for today’s modern economy.
- If the trend in energy continues, what looks nearly certain to be the Third Energy crisis of the last half-century may linger for years.

### Green Energy: A Bubble in Unrealistic Expectations, Part II by David Hay

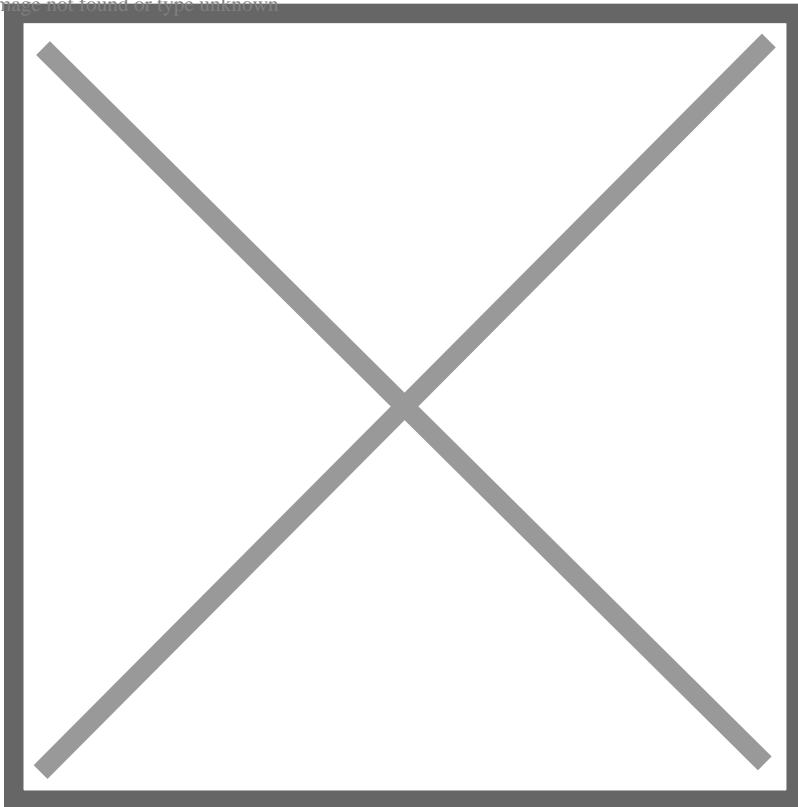
Last week’s first installment of this two-part advanced look at the “Bubble 3.0” chapter on what I have been calling [“Greenflation”](#) concluded with an image on the drastic increase in China’s oil consumption over the past 20 years. This voracious power appetite increase has been true with all of its energy sources.

On the environmentally-friendly front, that includes renewables; on the environmentally-unfriendly side, it also includes coal. In 2020, China added three times more coal-based power generation than all other countries combined. This was the equivalent of an additional coal

planet each week. Globally, there was a reduction last year of 17 gigawatts in coal-fired power output; in China, the increase was 29.8 gigawatts, far more than offsetting the rest of the world's progress in reducing the dirtiest energy source. (A gigawatt can power a city with a population of roughly 700,000.)

**Overall, 70% of China's electricity is coal-generated. This has significant environmental implications as far as electric vehicles (EVs) are concerned. Because EVs are charged off a grid that is primarily coal-powered, carbon emissions actually rise as the number of such vehicles proliferate. As you can see in the following charts from Reuters' energy expert John Kemp, Asia's coal-fired generation has risen drastically in the last 20 years, even as it has receded in the rest of the world. (The flattening recently is almost certainly due to Covid, with a sharp upward resumption nearly a given.)**

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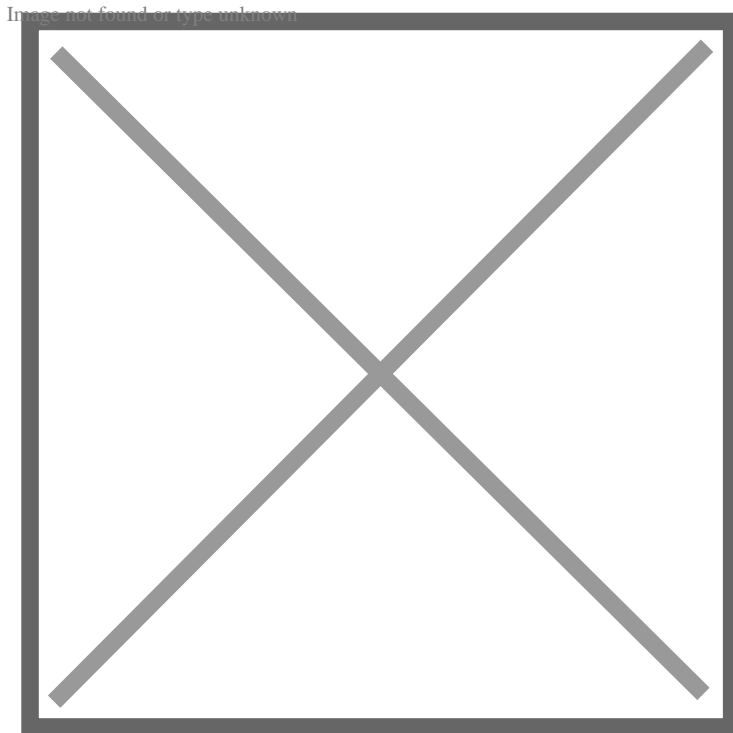


The worst part is that burning coal not only emits CO<sub>2</sub>—which is not a pollutant and is essential for life—it also releases vast quantities of nitrous oxide (N<sub>2</sub>O), especially on the scale of coal usage seen in Asia today. N<sub>2</sub>O is unquestionably a pollutant and a greenhouse gas that is hundreds of times more potent than CO<sub>2</sub>. (An interesting footnote is that over the last 550 million years, there have been very few times when the CO<sub>2</sub> level has been as low, or lower, than it is today.)

Some scientists believe that one reason for the shrinkage of Arctic sea ice in recent decades is due to the prevailing winds blowing black carbon soot over from Asia. This is a separate issue from N<sub>2</sub>O which is a colorless gas. As the black soot covers the snow and ice fields in Northern Canada, they become more absorbent of the sun's radiation, thus causing increased melting. (Source: "Weathering Climate Change" by Hugh Ross)

**Due to exploding energy needs in China this year, coal prices have experienced an unprecedented surge. Despite this stunning rise, Chinese authorities have instructed its power providers to obtain coal, and other baseload energy sources, such as liquified**

natural gas (LNG), regardless of cost. Notwithstanding how pricey coal has become, its usage in China was up 15% in the first half of this year vs the first half of 2019 (which was obviously not Covid impacted).



Despite the polluting impact of heavy coal utilization, China is unlikely to turn away from it due to its high energy density (unlike renewables), its low cost (usually) and its abundance within its own borders (though its demand is so great that it still needs to import vast amounts).

Regarding oil, as we saw in last week's final image, it is currently importing roughly 11 million barrels per day (bpd) to satisfy its 15 million bpd consumption (about 15% of total global demand). In other words, crude imports amount to almost three-quarter of its needs. At \$80 oil, this totals \$880 million per day or approximately \$320 billion per year. Imagine what China's trade surplus would look like without its oil import bill!

Ironically, given the current hostility between the world's superpowers, China has an affinity for US oil because of its light and easy-to-refine nature. China's refineries tend to be low-grade and unable to efficiently process heavier grades of crude, unlike the US refining complex which is highly sophisticated and prefers heavy oil such as from Canada and Venezuela—back when the latter actually produced oil.

Thus, China favors EVs because they can be de facto coal-powered, lessening its dangerous reliance on imported oil. It also likes them due to the fact it controls 80% of the lithium ion battery supply and 60% of the planet's rare earth minerals, both of which are essential to power EVs.

However, even for China, mining enough lithium, cobalt, nickel, copper, aluminum and the other essential minerals/metals to meet the ambitious goals of largely electrifying new vehicle volumes is going to be extremely daunting. This is in addition to mass construction of wind farms and enormously expanded solar panel manufacturing.

**As one of the planet's leading energy authorities Daniel Yergin writes: "With the move to electric cars, demand for critical minerals will skyrocket (lithium up 4300%, cobalt and nickel up 2500%), with an electric vehicle using 6 times more minerals than a conventional car and a wind turbine using 9 times more minerals than a gas-fueled power plant. The resources needed for the 'mineral-intensive energy system' of the future are also highly concentrated in relatively few countries. Whereas the top 3 oil producers in the world are responsible for about 30 percent of total liquids production, the top 3 lithium producers control more than 80% of supply. China controls 60% of rare earths output needed for wind towers; the Democratic Republic of the Congo, 70% of the cobalt required for EV batteries."**

As many have noted, the environmental impact of immensely ramping up the mining of these materials is undoubtedly going to be severe. Michael Shellenberger, a life-long environmental activist, has been particularly vociferous in his condemnation of the dominant view that only renewables can solve the global energy needs. He's especially critical of how his fellow environmentalists resorted to repetitive deception, in his view, to undercut nuclear power in past decades. By leaving nuke energy out of the solution set, he foresees a disastrous impact on the planet due to the massive scale (he'd opine, impossibly massive) of resource mining that needs to occur. (His book, "Apocalypse Never", is also one I highly recommend; like Dr. Koonin, he hails from the left end of the political spectrum.)

**Putting aside the environmental ravages of developing rare earth minerals, when you have such high and rapidly rising demand colliding with limited supply, prices are likely to go vertical. This will be another inflationary "forcing", a favorite term of climate scientists, caused by the Great Green Energy Transition.**

Moreover, EVs are very semiconductor intensive. With semis already in seriously short supply, this is going to make a gnarly situation even gnarlier. It's logical to expect that there will be recurring shortages of chips over the next decade for this reason alone (not to mention the acute need for semis as the "internet of things" moves into primetime).

**In several of the newsletters I've written in recent years, I've pointed out the present vulnerability of the US electric grid. Yet, it will be essential not just to keep it from breaking down under its current load; it must be drastically enhanced, a Herculean task. For one thing, it is excruciatingly hard to install new power lines. As J.P. Morgan's Michael Cembalest has written: "Grid expansion can be a hornet's nest of cost, complexity and NIMBYism\*, particularly in the US." The grid's frailty, even under today's demands (i.e., much less than what lies ahead as millions of EVs plug into it) is particularly obvious in California. However, severe winter weather in 2021 exposed the grid weakness even in energy-rich Texas, which also has a generally welcoming attitude toward infrastructure upgrading and expansion.**

Yet it's the Golden State, home to 40 million Americans and the fifth largest economy in the world, if it was its own country (which it occasionally acts like it wants to be), that is leading the

charge to EVs and seeking to eliminate internal combustion engines (ICEs) as quickly as possible. Even now, blackouts and brownouts are becoming increasingly common. Seemingly convinced it must be a role model for the planet, it's trying desperately to reduce its emissions, which are less than 1%, of the global total, at the expense of rendering its energy system more similar to a developing country. In addition to very high electricity costs per kilowatt hour (its mild climate helps offset those), it also has gasoline prices that are 77% above the national average.

\*NIMBY stands for Not In My Back Yard.

While California has been a magnet for millions seeking a better life for 150 years, the cost of living is turning the tide the other way. Unreliable and increasingly expensive energy is likely to intensify that trend. Combined with home prices that are more than double the US median--\$800,000!--California is no longer the land of milk and honey, unless, to slightly paraphrase Woody Guthrie about LA, even back in the 1940s, you've got a whole lot of scratch. More and more people, seem to be scratching California off their list of livable venues.

Voters in the reliably blue state of California may become extremely restive, particularly as they look to Asia and see new coal plants being built at a fever pitch. The data will become clear that as America keeps decarbonizing--as it has done for 30 years mostly due to the displacement of coal by gas in the US electrical system--Asia will continue to go the other way. (By the way, electricity represents the largest share of CO2 emission at roughly 25%.)

**California has always seemed to lead social trends in this country, as it is doing again with its green energy transition. The objective is noble though, extremely ambitious, especially the timeline. As it brings its power paradigm to the rest of America, especially its frail grid, it will be interesting to see how voters react in other states as the cost of power leaps higher and its dependability heads lower. It's reasonable to speculate we may be on the verge of witnessing the Californication of the US energy system.**

Lest you think I'm being hyperbolic, please be aware the IEA (International Energy Agency) has estimated it will cost the planet \$5 trillion per year to achieve Net Zero emissions. This is compared to global GDP of roughly \$85 trillion. According to BloombergNEF, the price tag over 30 years, could be as high as \$173 trillion. Frankly, based on the history of gigantic cost overruns on most government-sponsored major infrastructure projects, I'm inclined to take the over--way over--on these estimates.

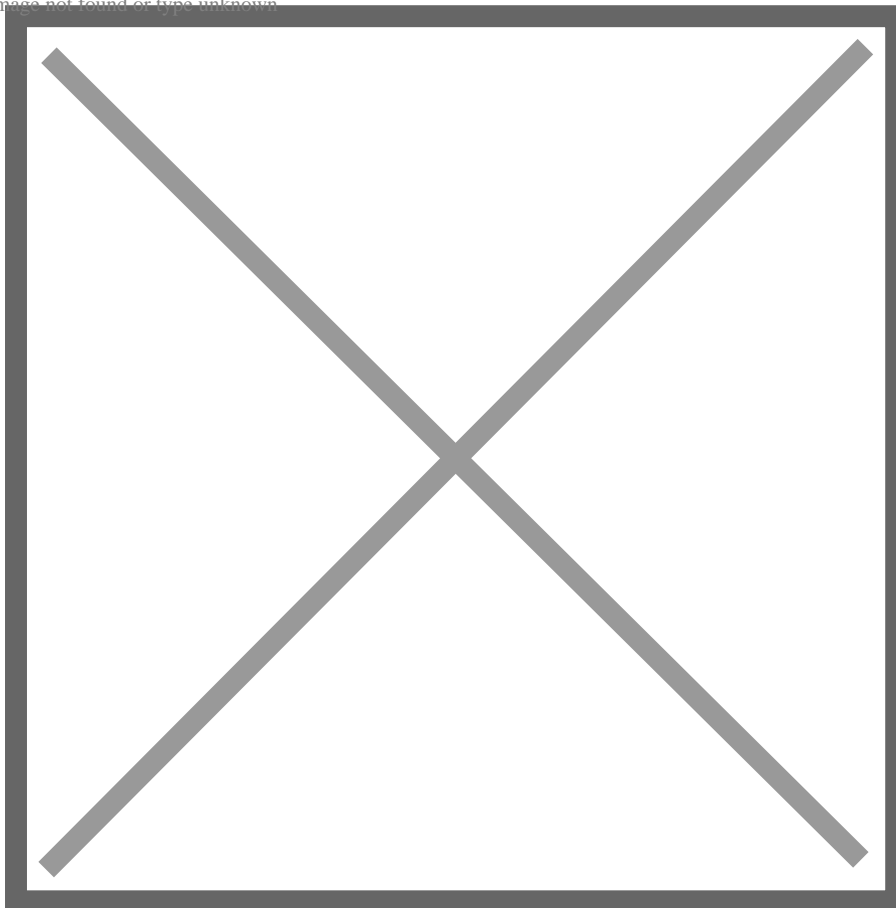
Moreover, energy consulting firm T2 and Associates, has guesstimated electrifying just the US to the extent necessary to eliminate the direct consumption of fuel (i.e., gasoline, natural gas, coal, etc.) would cost between \$18 trillion and \$29 trillion. Again, taking into account how these ambitious efforts have played out in the past, I suspect \$29 trillion is light. Regardless, even \$18 trillion is a stunner, despite the reality we have all gotten numb to numbers with trillions attached to them. For perspective, the total, already terrifying, level of US federal debt is \$28 trillion.

Regardless, as noted last week, the probabilities of the Great Green Energy Transition happening are extremely high. Relatedly, I believe the likelihood of the Great Greenflation is right up there with them.

**As Gavekal's Didier Darcet wrote in mid-August: ““Nowadays, and this is a great first in history, governments will commit considerable financial resources they do not have in the extraction of very weakly concentrated energy.” ( i.e., less efficient) “The bet is very risky, and if it fails, what next? The modern economy would not withstand expensive energy, or worse, lack of energy.”**

While I agree this an historical first, it's definitely not great (with apologies for all the “greats”). This is particularly not great for keeping inflation subdued, as well as for attempting to break out of the growth quagmire the Western world has been in for the last two decades. What we are seeing in Europe right now is an extremely cautionary case study in just how disastrous the war on fossil fuels can be (shortly we will see who or what has been a behind-the-scenes participant in this conflict).

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**Essentially, I believe, as I've written in past EVAs, we are entering the third energy crisis of the last 50 years. If I'm right, it will be characterized by recurring bouts of triple-digit oil prices in the years to come. Along with Richard Nixon taking the US off the gold standard in 1971, the high inflation of the 1970s was caused by the first two energy crises (the 1973 Arab Oil Embargo and the 1979 Iranian Revolution). If I'm correct about this being the third, it's coming at a most inopportune time with the US in hyper-MMT\* mode.**

**Frankly, I believe many in the corridors of power would like to see oil trade into the \$100s, and natural gas into the teens, as it will help catalyze the shift to renewable energy. But consumers are likely to have a much different reaction—potentially, a violently different reaction, as I noted last week.**

The experience of the Yellow Vest protests in France (referring to the color of the vest protestors wore), are instructive in this regard. France is a generally left-leaning country. Despite that, a proposed fuel surtax in November 2018 to fund a renewable energy transition triggered such widespread civil unrest that French president Emmanuel Macron rescinded it the following month.

\*MMT stands for Modern Monetary Theory. It holds that a government, like the US, which issues debt in its own currency can spend without concern about budgetary constraints. If there are not enough buyers of its bonds at acceptable interest rates, that nation's central bank (the Fed, in our case) simply acquires them with money it creates from its digital printing press. This is what is happening today in the US. Many economists consider this highly inflationary.

The sharp and politically uncomfortable rise in US gas pump prices this summer caused the Biden administration to plead with OPEC to lift its volume quotas. The ironic implication of that exhortation was glaringly obvious, as was the inefficiency and pollution consequences of shipping oil thousands of miles across the Atlantic. (Oil tankers are a significant source of emissions.) This is as opposed to utilizing domestic oil output, as well as crude from Canada (which is actually generally better suited to the US refining complex). Beyond the pollution aspect, imported oil obviously worsens America's massive trade deficit (which would be far more massive without the six million barrels per day of domestic oil volumes that the shale revolution has provided) and costs our nation high-paying jobs.

**Further, one of my other big fears is that the West is engaging in unilateral energy disarmament. Russia and China are likely the major beneficiaries of this dangerous scenario. Per my earlier comment about a stealth combatant in the war on fossil fuels, it may surprise you that a past NATO Secretary General\* has accused Russian intelligence of avidly supporting the anti-fracking movements in Western Europe. Russian TV has railed against fracking for years, even comparing it to pedophilia (certainly, a most bizarre analogy!).**

The success of the anti-fracking movement on the Continent has essentially prevented a European version of America's shale miracles (the UK has the potential to be a major shale gas producer). Consequently, the European Union's domestic natural gas production has been in a rapid decline phase for years.

**Banning fracking has, of course, made Europe heavily reliant on Russian gas shipments with more than 40% of its supplies coming from Russia.** This is in graphic contrast to the shale output boom in the US that has not only made us natural gas self-sufficient but also an export powerhouse of liquified natural gas (LNG).

In 2011, the Nord Stream system of pipelines running under the Baltic Sea from northern Russia began delivering gas west from northern Russia to the German coastal city of Greifswald. For years, the Russians sought to build a parallel system with the inventive name of Nord Stream 2. The US government opposed its approval on security grounds but the Biden administration has dropped its opposition. It now appears Nord Stream 2 will happen, leaving Europe even more

exposed to Russian coercion.

**Is it possible the Russian government and the Chinese Communist Party have been secretly and aggressively supporting the anti-fossil fuel movements in America? In my mind, it seems not only possible but probable. In fact, I believe it is naïve not to come that conclusion. After all, wouldn't it be in both of their geopolitical interests to see the US once again caught in a cycle of debilitating inflation, ensnared by the twin traps of MMT and the third energy crisis?**

\*Per former NATO Secretary General, Anders Fogh Rasmussen: Russia has “engaged actively with so-called non-governmental organizations—environmental organizations working against shale gas—to maintain Europe’s dependence on imported Russian gas”.

**Along these lines, I was shocked to listen to a recent podcast by the New Yorker magazine on the topic of “intelligent sabotage”. This segment was an interview between the magazine’s David Remnick and a Swedish professor, Adreas Malm. Mr. Malm is the author of a new book with the literally explosive title “How To Blow Up A Pipeline”. Just as it sounds, he advocates detonating pipelines to inhibit fossil fuel distribution.**

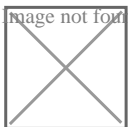
Mr. Remnick was clearly sympathetic to his guest but he did ask him about the impact on the poor of driving energy prices up drastically which would be the obvious ramification if his sabotage recommendations were widely followed. Mr. Malm’s reaction was a verbal shrug of the shoulders and words to the effect that this was the price to pay to save the planet.

Frankly, I am appalled that the venerable *New Yorker* would provide a platform for such a radical and unlawful suggestion. In an era when people are de-platformed for often innocuous comments, it’s incredible to me this was posted and has not been pulled down. In my mind, this reflects just how tolerant the media is of attacks on the fossil fuel industry, regardless of the deleterious impact on consumers and the global economy.

**Surely, there is a far better way of coping with the harmful aspects of fossil fuel-based energy than this scorched earth (literally, in the case of Mr. Malm) approach, which includes efforts to block new pipelines, shut existing ones, and severely restrict US energy production. In America’s case, the result will be forcing us to unnecessarily and increasingly rely on overseas imports. (For example, per the *Wall Street Journal*, drilling permits on federal land have crashed to 171 in August from 671 in April. Further, the contentious \$3.5 trillion “infrastructure” plan would raise royalties and fees high enough on US energy producers that it would render them globally uncompetitive.)**

**Such actions would only aggravate what is already a severe energy shock, one that may be worse than the 1970s twin energy crises. America has it easy compared to Europe, though, given current US policy trends, we might be in their same heavily listing energy boat soon.**

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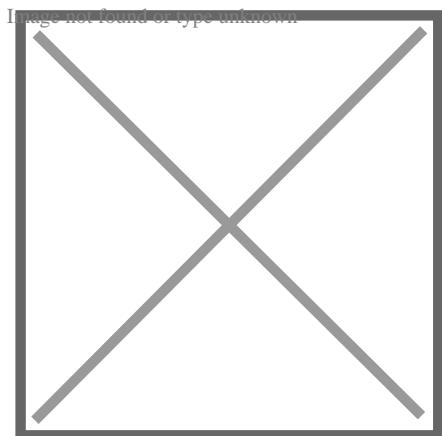


Solutions include fast-tracking small modular nuclear plants; encouraging the further switch from burning coal to natural gas (a trend that is, unfortunately, going the other way now, as noted



above); utilizing and enhancing carbon and methane capture at the point of emission (including improving tail pipe effluent-reduction technology); enhancing pipeline integrity to inhibit methane leaks; among many other mitigation techniques that recognize the reality the global economy will be reliant on fossil fuels for many years, if not decades, to come.

**If the climate change movement fails to recognize the essential nature of fossil fuels, it will almost certainly trigger a backlash that will undermine the positive change it is trying to bring about. This is similar to what it did via its relentless assault on nuclear power which produced a frenzy of coal plant construction in the 1980s and 1990s. On this point, it's interesting to see how quickly Europe is re-embracing coal power to alleviate the energy poverty and rationing occurring over there right now—even before winter sets in. When the choice is between supporting climate change initiatives on one hand and being able to heat your home and provide for your family on the other, is there really any doubt about which option the majority of voters will select?**



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