



P E R S P E C T I V E S

by **Rinaldo S. Brutoco**

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Freedom Fuel

No "Planet B"

1,000,000,000 = 1 Billion Euros (\$1.1 Billion in US dollars) per day. That's what Europe sends to Russia in cash every single day. At that rate, Russia can finance a war for a very long time. At that rate, Russia can commit unlimited atrocities. And, even though some are afraid to call what Russia is doing in Ukraine genocide, that's what it is.

So, here's a question: if Hitler was a permanent member of the UN Security Council, would he have been allowed to remain a member in 1940 after the world began to understand the horrific crimes against humanity he was committing? Not likely. If the UN Charter has to be ripped up and re-written to deal with Russian atrocities, then President **Volodymyr Zelensky** is correct. That's what needs to happen.

Another question: would any country in Europe have been willing to send \$1.1 Billion per day to the Nazis so they could prolong their war terrorizing all of Europe? Not likely on that one either.

So, what's different this time? Think of all the atrocities one evil regime can commit financed by that much cash every day. Think of how little sacrifice it would take to cut that cash off and stop the war crimes immediately.

Several good, independent estimates have shown that the German economy would suffer a decline in the two to five percent range if it stopped buying all Russian oil and gas. Given what the Ukrainians are going through, that doesn't seem like that big of a sacrifice. And, considering how Europe as a whole MUST deal with the renegade war criminal **Vladimir Putin**, stopping all Russian fossil fuel sales to Europe seems like a "no brainer."

Where is the courage? Where is the wisdom?

The fear that Germany will run out of energy is simply overstated and false. In the short run, there will be mild disruptions for sure. In the medium term, two new Liquefied Natural Gas (LNG) terminals will be opened in Germany to transition more of its energy requirements to reliable suppliers from the West. In the long term, Germany will become a full hydrogen economy with ample energy at comparative prices that are below today's market prices for fossil fuels. The only thing stopping us from getting there is the courage to embrace the future and release the past.

Germany is longing for freedom from the fossil fuel addiction that keeps it the largest single sponsor of the Russian atrocities being committed in Ukraine. The rest of Europe also bears some responsibility, but it is principally Germany that has to say "Nyet" to Russian fossil fuel sales so that Putin's illegitimate regime can be brought to bear.

What an irony. The Germans have the tool to bring these atrocities to an end but refuse to do what humanity is crying out for—to cut off Putin’s financial support so he is left having to pull his army back immediately. Ukraine wants freedom. Germany wants freedom. We all want freedom.

We want freedom from our collective fossil fuel addiction. We want freedom from biosphere disruption and degradation. We want freedom from the economic restraints imposed by a shared oligopoly of fossil fuel companies. We want freedom from energy dependency on Petro states like Russia, Saudi Arabia, and others. We want freedom from the air pollution that kills 7,000,000 people every year, largely created by internal combustion engines according to **Bertrand Piccard** from the Solar Impulse Foundation. We want freedom from rising seas, vicious tornadoes, and hurricanes, and from the melting of the arctic ice cap, the melting of the world’s glaciers, and freedom from the accelerating waves of climate refugee migration.

The key to unlocking all that freedom is contained in the simplest molecule known to humans: the humble hydrogen molecule. That’s why we call it the “Freedom Fuel”. Launching the hydrogen economy is the only way we are ever going to achieve all those listed freedoms. Best of all, conversion to the hydrogen economy will unleash a level of accelerated global wealth that will outpace the impact of the Industrial Revolution and alter, for the better, how we live on Terra Firma indefinitely into the future. The greatest technological, scientific, and financial revolution of all time awaits—all brought to us by the most abundant atom in the Universe. Literally, hydrogen represents 73 percent of all the atoms in the visible universe. It’s all around us. It’s incredibly powerful.

Discovered in 1783 by the French chemist Antoine Laurent Lavoisier, hydrogen is the simplest of all atoms (1 proton, 1 neutron, and 1 electron) and hence occupies the first space on the periodic table of the elements. To save human civilization as we know it, we must have a Climate Revolution, and the only way that can happen is by unleashing the incredible “green” power of hydrogen.

It will become the dominant fuel for all cars, buses, long-haul trucks, locomotives, ferry boats, certain types of ocean-going vessels and certain aircraft. It will be the way to make “green steel” (the first such plant is operational today in Sweden) and ultimately “green cement,” as well as the way we’ll revolutionize our electrical systems based exclusively upon renewable energy with fuel cell supported microgrids around the globe, all to be supplemented by green hydrogen fuel cells.

It is stunning to realize how fossil fuel companies became powerful enough to politically block this amazing green fuel, that was first used to create clean electricity run through a fuel cell by William Robert Grove in 1893, for all these years. We’ve possessed good electrolyzer technology for more than 50 years, enabling us to “crack” water (H₂O) into oxygen and hydrogen from any electrical source. We now know those “electrical sources” can, and should, be renewable energy sources like biomass, wind, solar, geothermal, hydro, and ocean thermal conversions. In a fuel cell with hydrogen derived from an electrolyzer powered by renewable energy, not a single molecule of pollution occurs in that cycle. That’s how we eliminate carbon dioxide and other greenhouse gases like sulfur dioxide and nitrous oxide from the atmosphere.

As reporter **Nicole Scott** aptly observed in the recent documentary, *Discovering Hydrogen*, “Creating a hydrogen society is all about fostering an ecosystem of renewables.” That’s how we achieve freedom from our fossil fuel addiction. We fix the biosphere on this beautiful blue gem we’ve inherited and leave it healthy for future generations. There is no Planet B.

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