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[00:00:00] **Nate Hagens:** Good evening. Welcome to another installment of Wide Boundary News, Iran. And what is building there is the biggest ostensibly story this week, so I'll save that for last in the news, in the narrow boundary news and some of our feeds. For the first time, wind and solar generated more electricity than fossil fuels did in the European Union, 30% versus 29%.

[00:00:38] Solar has grown 20% per year for four straight years, and all renewables are approaching 50%. of the electricity mind you, which is around 20, 22% of all energy and including nuclear. The mix is 70% clean electricity while narrow boundary clean. So headlines abound the last couple weeks how the energy transition is working.

[00:01:03] If we only would follow Germany's example. But the system cost tells a different story. Germany has the highest electricity prices in Europe and the price of industrial electricity is now running two to three times what competitors in the US and four to five times what China pays. The result is de-industrialization in real time.

[00:01:26] BASF hasn't turned a profit in Germany in two years. And as a result, has shut multiple production lines, closed ammonia plants, and is shifting investments to the US and to China. Many other major multinationals are exiting Europe's chemical sector entirely, and closing steel and other energy sensitive, intensive facilities.

[00:01:50] Over a hundred thousand German manufacturing jobs disappeared Last year, almost a thousand manufacturing firms filed for bankruptcy in the first half, 2025, and GDP has been negative for five consecutive quarters. So the wide

boundary lens here. It illustrates why we can never evaluate things like an energy transition by looking at the electricity mix alone, wind and solar.

[00:02:15] Reaching 30% in the EU is the visible numerator of a fraction whose denominator is shrinking. Industrial demand is leaving Europe, which makes the renewable share look better while the economy gets worse. The energy wind, did add renewables, but it also shut down nuclear. Replacing zero carbon base load with intermittency severed Russian gas, replacing cheap pipeline gas with expensive LNG, and layered on carbon taxes and grid surcharges that made the total system cost.

[00:02:52] Uncompetitive Europe is running a real-time experiment in whether an advanced industrial economy can maintain its productive capacity at today's Superorganism throughput level, of course, while fundamentally restructuring its energy system. And so far the answer is not without enormous economic pain and possibly not at all.

[00:03:14] The question isn't whether renewables can scale because they clearly can in a lower complexity countries might make sense to do so. Economic sense. The salient question is whether an industrial economy can survive the transition without destroying the productive base that it's trying to power. Okay. A sidebar, on this, for people who haven't watched any of my.

[00:03:41] 212 energy overview presentations online. We combine fossil hydrocarbons with machines to replace what humans used to do manually at a tiny, fraction of the cost, which gives us massive economic benefits because we're replacing one unit of human labor with thousands or more units of fossil.

[00:04:03] Input for pennies. And the problem is this industrial model, the world over becomes extremely sensitive to total energy costs because of the thousands of units of energy we use. So a doubling or tripling of energy costs makes once

profitable configurations break even or actually lose money. And we're seeing this in Germany and elsewhere in real time.

[00:04:28] Okay. Story number two in the news, A related one, China's CO2 emissions were flat or slightly down three tenths of 1% in 2025. And again, every news outlet is framing this chart as proof the green transition is working. That's looking at the chart. Let's look at the system. Chinese coal production hit an all time record of 4.8 billion tons in 2025, up 1.2%.

[00:04:54] Coal power capacity additions hit their highest level in a decade. New coal project proposals surged to a record, a 1.6 gigawatts, and China still consumes nearly 40% more coal than the rest of the world combined. So where did the emission savings come from? Cement production collapsed close to 10% due to the real estate contraction, building materials, metals and steel all down.

[00:05:22] So the emissions decline isn't clean energy, replacing dirty energy in a growing economy. It's partly a construction sector in free fall. Masking continued and growing coal dependence and the chemical sector, which is coal to chemicals. Grew their emissions 12%. This is the EU renewable story. Again, just from the other direction, the metric and the graphics in the news, flat emissions looks like.

[00:05:49] Progress. but the system record coal collapsing cement, on a real estate crisis tells us something very different. So in the early stages of this episode, perhaps the editorial lesson of wide boundary news, at least so far, is always look at the system, not just the chart. As an aside, I think is relevant to inject here.

[00:06:16] There are lots of people with different values and priorities working towards different flavors of the future. we all still live in an economic system that is optimizing growth and energy metabolism in this world. you can think of three

different pricing models. Pricing model one. Basically China has unhindered cost pricing.

[00:06:40] Model two adds a green wedge because to them. The company or the nation, it's worth it and important to include externalities of harm to nature and pricing. Model three adds this green wedge and also a depletion wedge in the form of taxes on inputs that are non-renewable on human timescales. Europe does this.

[00:07:03] for instance, gasoline is like $10 a gallon there. The point is that businesses or nations following this pricing model three, like Germany, will make the best long-term decisions, but in the short term, in other words, now they'll be outcompeted in the real world by businesses and nations that focus on pricing model one.

[00:07:28] So we are running two experiments of different values at the same time on a non level playing field. And the next news item reminds us why these categories and discussions are relevant. For us, for our children, their children, and other species. The last 11 years are the 11 hottest, on record, Berkeley Earth and many other sources.

[00:07:53] Confirm 23 20 23 to 2025 constituted a warming spike that exceeded natural variability with 99% plus confidence. So the wide boundary perspective on this, here's a chart that helps us explain why. That is the case. The red line and the air bands shaded is the warming we would get from greenhouse gases alone.

[00:08:20] The yellow line is the cooling we were getting from aerosols, mostly sulfur pollution, which reflects sunlight and brightens clouds, and the black line is the net result of these. So unwittingly for decades, we were running two experiments at once. We kept turning up the greenhouse gases, but we also had partial shade of the sun from dirty air.

[00:08:46] And as we clean up this sulfur pollution, which is a huge public health wind, that shading is starting to dis dissipate quickly. And the warming we already created then manifests more obviously. So we've been turning up the heat while also dimming the sun and now we're cleaning the air. So the sun's coming back and the heat is still on.

[00:09:14] wide boundary observation on the warming. Okay. In another nature news item, a landmark study in nature communications, analyzing a century of biodiversity surveys found that species turnover in local habitats has significantly slowed the opposite of what ecologists predicted Rather than species rapidly reshuffling and moving in response to warming, ecosystems appear to be losing.

[00:09:41] The internal dynamism that allows for adaptation. Regional species pools aren't moving. They're depleting, leaving less raw material for ecological reorganization. Ecosystems function like a self-repairing engine, constantly swapping their parts. To continue with that example, the engine in many ecosystems around the planet is running out of spare parts, so a place can look unchanged year to year, while the toolkit parts and such underneath it is shrinking.

[00:10:16] That's how brittle systems behave. They look fine until they do not, and when a system can no longer reorganize. It doesn't degrade gradually, it collapses. So the headline is much deeper and more profound than species are moving, less than we thought it is that many ecosystems may be losing their ability to improvise in the future.

[00:10:40] And this echoes the denominator check I mentioned, before and running through this whole episode, perhaps that the chart looks stable, but the system underneath is not. Okay. coming back to biophysical macro new start, S-T-A-R-T, the last nuclear Arms control treaty between the United States and Russia.

[00:11:02] Expired February 4th with no replacement. As the recent roundtable with Chuck Watson and Mark Menish alluded to and feared, there are now zero legally binding limits on the world's two largest nuclear arsenals for the first time since the 1970s. The Bulletin of Atomic Scientists warns nuclear risk continued to rise in 2025 across three theaters, Ukraine, middle East, and Asia.

[00:11:30] Chatham House identifies the risk of a NATO member shooting down a Russian drone as one of their key 2026 escalation triggers. The wide boundary lens here is the architecture built over 50 years to prevent nuclear catastrophe has now fully collapsed. This is nominally about warheads, but it's really about the loss of transparency mechanisms like inspections, data exchanges, notifications, dialogues that prevent an archduke Ferdinand type miscalculation.

[00:12:07] And in a world of accelerating geopolitical competition, we have removed the guardrails designed specifically for moments like this. Human institutions designed for stability are being dismantled faster than they can be replaced, and the consequences are potentially irreversible on civilization timescales.

[00:12:31] Okay, Iran. The last Arms Control Treaty expired three weeks ago, and we're now contemplating sustained military options against a nation whose nuclear program is the stated reason for those operations. While Russia and China run naval exercises in the strait of home use. The USA now has two carrier strike groups in the vicinity.

[00:12:55] President Trump has vowed a shock and awe campaign or something more serious unless Iran Capitulates. This is all over the news and its various flavors, and I could spend this entire episode on the wide boundary angles of this developing story. I'll just offer two here. The news outlets all correctly.

[00:13:18] Point out that around 20 million barrels of crude oil passed through a two mile wide stretch of the strait of hor moose each day with about a hundred million barrels per day consumed. They labeled this as 20% of world oil. But about half of the oil the world extracts is consumed in the country that extracts it, leaving only around 50 million or so barrels for purchase, making fully 40% or so of the world's purchasable oil coming through, this fossil pixie dust gauntlet, in the Strait of Horus in Iran.

[00:13:55] What could go wrong? Wide boundary. Point number two is about the complacency, about what could go wrong, around this building of military hardware and warships and war machinery. In the past, the USA attacks on Iran and many other places were surgical and effective. The world went right back to Netflix and chill a few hours later.

[00:14:22] This is an example of the concept of risk homeostasis that Chuck Watson outlined on an earlier podcast. Think of running a red light in your car 10 times in a row, but nothing bad ever happening. by chance you would over time adjust your behavior from caution to disregard to an outright cavalier attitude.

[00:14:47] Not because the risk had changed. It's dangerous to run a red light, but because you psychologically adjusted your own behavioral homo homeostasis based on your personal experience. I think this is happening on steroids. In this Iran situation, Iran chose not to retaliate and chose not to attempt to close the straits the last time and chose not to retaliate via proxies or sleeper cells in Europe or whatever.

[00:15:17] And the arcade game like war actions we see on TV one of these days will have a fat tail implication for all of our lives. How many times can we run a red light in the great game of power? Lastly, for my editorial on this edition of Wide Boundary News. I'm told the decision has been made to bomb Iran, but my sources are now kind of irrelevant because any of us can now at any moment look

at the aggregate betting odds on places like Poly Market who, as of this recording say there's a 19 chance, 19% chance by March 7th and a 55% chance by the end of March that the US will bomb Iran.

[00:16:06] The fact that a prediction market exists where people place bets on whether the USA will bomb a sovereign nation this weekend or next week or this year, and that this is treated as normal, is itself a wide boundary observation. War as a wagering category, complete with resolution rules specifying which type of munitions qualify.

[00:16:33] What a species we are. This is not a critique of prediction markets. As a forecasting tool, yes, they can surface useful probability signals. The point is what our culture has normalized. When the potential destruction of a country of 90 million people's infrastructure, the dislocation and beyond, who knows of 40% of global oil for purchase and the risk of regional war pulling in Russia and China.

[00:17:04] It becomes something you can bet on from your phone between checking your fantasy league and your crypto portfolio. The information environment we live in has fully absorbed geopolitical violence into the entertainment layer and the gravity of this event and the historical civilizational register in which it is being processed are now completely decoupled.

[00:17:35] My friends, the ground is shifting beneath us. Tectonic shifts are ahead. I expect who are we and who do we wanna be, is something that I, ask myself every day. I will talk to you next week.