The Week That Was: 2024 05-04 (May 4, 2024) Brought to You by SEPP (www.SEPP.org) The Science and Environmental Policy Project

Quote of the Week: "Mathematics is the Language of Science" – Attributed to Galileo. He believed that the book of nature (natural philosophy (physical science)) is written in the language of mathematics.

Number of the Week: 32-year-old infants

THIS WEEK:

By Ken Haapala, President, Science and Environmental Policy Project (SEPP)

Scope: Included in the discussion is a new paper by Henrick Svensmark, *et al.* which may advance our understanding of clouds. An effort is made to distinguish among mathematics, logic, and science, which are often combined together incorrectly. Examples of the importance of testing against physical evidence are presented. Washington's spending plans are discussed in light of photosynthesis. The IEA's failure to use critical thinking is presented. And the 42nd Annual Meeting of the Doctors for Disaster Preparedness is mentioned.

Understanding Clouds: A perplexing problem for scientists studying changing climate and weather is the role of clouds which are important for both. In their work "The Role of Greenhouse Gases in Energy Transfer in the Earth's Atmosphere" using the HITRAN database professors van Wijngaarden and Happer clearly state that their work is for clear skies only. It does not apply to cloudy conditions. Happer has stated they are working on a general theory for cloud formation. Several papers are posted on van Wijngaarden's website but are too technical to be discussed here.

The papers include: "Effect of Greenhouse Gases on Thermal Emissivity by Clouds", "Radiation Transfer in Cloud Layers", "2n-Stream Thermal Emission from Clouds", "2n-Stream Conservative Scattering", and "2n-Stream Radiative Transfer." The authors have postponed any effort to have these papers published in major Western journals because they are immediately rejected or subject to time-wasting trivial objections. Such is the extent of "scientific groupthink" in adhering to the work of the UN Intergovernmental Panel on Climate Change (IPCC) and its followers. As seen with the eventual adoption of Copernican heliocentric system and, in the 20th century, Quantum Mechanics and its strange findings; open discussion and criticism of existing scientific groupthink is essential for science to progress.

Thus, it is good to see a paper published that disturbs the current groupthink, though it is limited in scope. Geophysical Research Letters published "Supersaturation and Critical Size of Cloud Condensation Nuclei in Marine Stratus Clouds" by Henrik Svensmark and the co-authors include Nir Shaviv. The abstract, key points, and plain language summary state:

[&]quot;Abstract

Observations of marine stratus clouds in clean air off the Californian coast reveal a functional relationship between the number of cloud condensation nuclei (CCN) and supersaturation. Satellite-derived liquid droplet density estimates the number density of CCN. Combining the estimated supersaturation using Köhler theory, global maps of supersaturation and the critical activation size of CCN are estimated. Here, we show that high supersaturation >0.5% persists over the oceans with a critical CCN size of 25–30 nm, which is smaller than the conventional wisdom of 60 nm. Independent support for such high supersaturation in the marine cloud is obtained from CCN measurements provided by the "Atmospheric Tomography Mission." Higher supersaturation implies smaller activation size for CCN making cloud formation more sensitive to changes in aerosol nucleation.

Key Points

- On average, supersaturation in marine clouds is significantly higher than the conventional view of 0.2%–0.3%
- Due to the higher supersaturation, much smaller aerosols get activated into cloud droplets.
- The results are essential for better understanding aerosols-cloud interactions.

Plain Language Summary

Clouds in Earth's atmosphere are of fundamental importance for the climate by regulating the reflection of sunlight into space and interacting with thermal radiation from Earth. Clouds form when moist air ascends and gets supersaturated with water vapor that condenses on aerosol particles of sufficient sizes, which then grow into cloud droplets. The aerosol number-density and size spectrum influence the resulting cloud properties, and the supersaturation determines which aerosols can be activated into cloud drops. Here, we show that the supersaturation in marine liquid clouds is significantly higher than in the conventional view. As a consequence, much smaller aerosols can serve as cloud condensation nuclei. This can make cloud formation more sensitive to changes in aerosol properties than previously thought. Such a result should be of general interest and lead to a better understanding of aerosol-cloud interactions, which presently constitute the largest uncertainty in our understanding of climate."

It should be remembered that the Svensmark hypothesis that atmospheric ionization produced by high energy cosmic rays influence aerosols and clouds has been thoroughly tested by the CERN Large Hadron Collider and was not rejected. Aerosols are a black box in global climate models and better understanding of how they are formed may lead to greater clarity in understanding cloud formation and dissipation. Certainly, the written European records of the Little Ice Age show long, harsh winters and short, wet summers when crops did not ripen, leading to the diseases from toxic fungi growing on the unripen grain. The IPCC ignores this cold period by claiming it was regional, not global. But the limited record from North America showed it occurred there as well.

We will see if the Svensmark hypothesis will be considered by future IPCC reports or just ignored. The Svensmark hypothesis has been extensively discussed in past TWTWs such as the one by S. Fred Singer on August 29, 2009, "Sunspot frequency has an unexpectedly strong

influence on cloud formation and precipitation." Also, it is summarized in the 2008 NIPCC report: "Nature, Not Human Activity, Rules the Climate", pp 11-13. See links under Science: Is the Sun Rising?, Challenging the Orthodoxy – NIPCC, and Challenging the Orthodoxy – Radiation Transfer. The papers posted on the William van Wijngaarden website can be found at: https://wvanwijngaarden.info.yorku.ca/publications/.

Mathematics and Logic: An individual identified as Molly Slag authored an interesting essay published in The American Thinker emphasizing the importance of mathematics in education. In discussing the relationship between math and science, she writes:

"In his introduction to **Human Diversity: The Biology of Gender, Race, and Class**, Charles Murray explains,

'The sciences form a hierarchy. 'Physics rests on mathematics, chemistry on physics, biology on chemistry, and, in principle, the social sciences on biology,' wrote evolutionary biologist Robert Trivers.'

This places mathematics at the foundation of all the sciences. Galileo Galilei (1564-1642), the father of modern science, was an Italian mathematician, physicist, astronomer, and natural philosopher. Frequently attributed to Galileo is the quip that 'Mathematics is the language of science.'"

That quip is without question a true assertion, and it raises several follow-up questions, two of which are:

- (1) If math is the language of science, then what is the language of mathematics?
- (2) Exactly what is mathematics?"

Each of these two questions has a simple but, perhaps, surprising answer.

First, The language of mathematics is ordinary modern language; that is, English, Spanish, German, Chinese, etc. This means that all that so many math-phobic people view as mathematical gobbledygook is, in reality, a compact and economical rendition of ordinary language.

For a simple example of this, the English statement "Five plus three times some real number x is twenty-three" can be rendered in math-talk as "3x+5=23". This compact algebraic symbolism is a great convenience, facilitating the development of simple techniques for "solving the equation" that are easily within the grasp of the middle schooler."

She then mentions an equation in calculus, not shown here, with an explanation. Then writes:

"The average reader unfamiliar with calculus is not expected to understand that passage, but the point is that the English passage and the mathematical notation have the same meaning—and one could do the same with the mathematical notation and any other language.

And secondly, exactly what is mathematics? The answer is simple, albeit perhaps a bit mysterious: Mathematics is logic applied to a quantitative axiom system.

As mathematics is a branch of logic, it serves as a conduit for applying logic to problems. Approaching a problem mathematically is a technique for bringing logic to bear upon it.

Mathematics thus consists of only three kinds of entities: axioms, definitions, and theorems. Theorems are propositions logically deduced from the axioms and definitions.

An axiom is a proposition taken as true without proof. The axiom systems are usually (but not necessarily) deemed (assumed, believed) to describe nature, and the application of logic to the axiom is, therefore, deemed to reveal information about nature.

The key point here is that mathematics, at its essence, is logic applied to nature."

In the last statement is a problem that has vexed logicians since the late 1800s. With the British mathematician and philosopher Alfred North Whitehead, the great logician and philosopher Bertrand Russell, who also was an extremely clear writer, began writing their monumental work Principia Mathematica in 1910 and concluded in 1913. Russell later described the three-volume work as the most difficult task he ever undertook. In Principia Mathematica, Whitehead and Russell attempted to show that the basic concepts and reasoning used in mathematics are definable in logic.

The work was an effort to overcome the Russell Paradox which he discovered in 1901. A logical paradox is a statement derived by valid reasoning that leads to a conclusion that contradicts another statement derived by valid reasoning from the same assertion or assumption. The Russell Paradox is from set theory, but such paradoxes apply to other mathematical branches. As it turned out the German mathematical logician Gottlob Frege had already recognized the problem.

Later, Austrian-born mathematician and logician, Kurt Godel (1906-1978) developed the Incompleteness Theorem that it is impossible to use axioms alone to produce all true mathematical statements. Recognizing this, the Hungarian-born American mathematician John von Neumann realized that no formal system containing arithmetic can prove its own consistency. That is, there is no way to show that any useful formal system is free of false statements.

The work of Frege, Russell, Whitehead, Godel and von Neumann are all vital in the development of the philosophy of mathematics. Principia Mathematica is an advancement in mathematical logic and the philosophy of mathematics. But mathematics is similar to but separate from pure logical reasoning. Further, language often cannot adequately describe pure logic.

TWTW undertook this excursion in mathematics and logic to illustrate that the application of mathematics and logic are vital to our understanding of the natural world, but they cannot adequately capture it free from error. They may be error-free within a "closed system" but not necessarily error-free outside that system, particularly when they are applied to nature. The false

belief that mathematics and logic are "error free" **in nature** leads to erroneous activities such as the EPA's applications of the Linear No Threshold Model, discussed in previous TWTWs, and belief that global climate models adequately describe the influence of increasing atmospheric carbon dioxide concentrations, which are tiny. All of these can be refuted by adequate testing against physical evidence. All model results need to be tested by observations from nature.

See link under Seeking a Common Ground and the March 23, April 6, and April 13 TWTWs; https://www.sepp.org/twtwfiles/2024/TWTW%20Apr%206.pdf, https://www.sepp.org/twtwfiles/2024/TWTW%204-13-2024.pdf. https://www.sepp.org/twtwfiles/2024/TWTW%204-13-2024.pdf. https://www.sepp.org/twtwfiles/2024/TWTW%204-13-2024.pdf.

Testing: David Siegel has a four-minute video testing the claim that increasing carbon dioxide concentrations are driving increasing temperatures. He shows the records from three locations in diverse places. The first is from Vostok Station, Antarctica, a place with low humidity which started collecting temperature data in 1958. The closest station collecting CO2 data is in Tasmania, and the data corresponds with that reported by the NOAA laboratory at Mauna Loa, Hawaii. In the sixty-five years since 1958, temperatures at Vostok Station have risen less than 1°C (less than 2°F) in both the summer and winter. The warming is not dangerous.

Similar results come from Death Valley, Nevada, the dryest place in the US. The third location is Stykkisholmur, on a peninsula on the west coast of Iceland. Iceland is on the northern regions of the Gulf Stream. The colder, south bound polar current is to the west, along the coast of Greenland. Here the measurements start in 1798 and show a warming of 0.8°C (1.4°F) every 100 years. Not much to be alarmed about.

Note that the global atmospheric temperature trend measurements reported by Roy Spencer and the UAH team, show a linear warming trend since January 1979 of 0.15 C (0.27F) per decade.

On a similar topic, Willis Eschenbach plots some of latest round of global climate modeling for the IPCC known as the sixth Coupled Model Intercomparison Project (CMIP6). These are often incorrectly called data, but they are not physical evidence, just model results.

Eschenbach finds a sad change. In the past, the models were similar in history but diverged in forecasts. For the models he plotted, Eschenbach finds the models give similar forecasts but diverged in history.

See links under Challenging the Orthodoxy, Model Issues, and Measurement Issues – Atmosphere.

Government v. Flourishing of Life: Using forecasts from mathematical models which are refuted by physical evidence but are called science by the EPA and other Federal government entities, Washington continues to suppress carbon dioxide emissions in the US. It cannot hope to do so for the emissions from China, by far the most in the world, or up-and-coming India.

Last week TWTW incorrectly misidentified the Washington approach as an all-of-government approach. The approach is officially called the-whole-of-government. The White House produced a guide for what is being done -- the Inflation Reduction Act Guidebook. It states:

"On August 16, 2022, President Biden signed the Inflation Reduction Act into law, marking the most significant action Congress has taken on clean energy and climate change in the nation's history. With the stroke of his pen, the President redefined American leadership in confronting the existential threat of the climate crisis and set forth a new era of American innovation and ingenuity to lower consumer costs and drive the global clean energy economy forward.

This guidebook provides an overview of the clean energy, climate mitigation and resilience, agriculture, and conservation-related investment programs in President Biden's Inflation Reduction Act, including who is eligible to apply for funding and for what activities."

What so-called "clean energy" and climate mitigation have to do with inflation reduction is not explained. Apparently, it is just another way to twist English to promote government spending.

Some of the major spending programs of the total of 119 programs include:

Advanced Industrial Facilities Deployment Program (DOE) \$5.8 Billion; Advanced Technology Vehicle Manufacturing Loan Program (DOE) \$3 Billion; Clean Heavy-Duty Vehicles (EPA) \$1 Billion; Climate Pollution Reduction Grants: Implementation Grants (EPA) \$4.75 Billion; Empowering Rural America (Dept. of Agriculture (DOA)) \$9.7 Billion; Energy Infrastructure Reinvestment Financing (DOE) \$5 Billion; Environment and Climate Justice Block Grants (EPA) \$3 Billion; Environmental Quality Incentives Program (DOA) \$8.4 Billion; several Greenhouse Gas Reduction Programs (EPA) \$6 Billion, \$14 Billion, \$7 Billion, and so on.

Further under Climate

The White House reports:

"President Biden will take swift action to tackle the climate crisis. To meet the demands of science, the President is mobilizing a whole-of-government effort to reduce climate pollution in every sector of the economy and increase resilience to climate impacts. The Biden Administration will create good-paying, union jobs to build a modern and sustainable infrastructure, deliver an equitable clean energy future, and put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050." [Boldface added]

In 2009, without compelling physical evidence, the EPA declared carbon dioxide (CO2) is a pollutant. Yet, CO2 is essential for photosynthesis, which creates glucose (simple sugar) and oxygen. Glucose is the food source of all complex life on Earth and oxygen is needed for all animal life. One dominant feature from the increase in atmospheric CO2 is the flourishing of life, which is shown by Landsat satellite photos since 1972, over 50 years.

So, the whole-of-government in Washington is now opposed to the flourishing of life on Earth.

See link under Washington's Control of Energy and https://www.whitehouse.gov/priorities/

IEA: The International Energy Agency (IEA) was founded in 1974 in response to the Arab Oil Crisis, to provide solid information on energy and policy recommendations to its member countries. Like many international organizations, it has lost its way. Francis Menton demonstrates the foolishness of IEA's current thinking. He writes:

"When people get into advocating for this 'energy transition,' the stars regularly align to bring forth the most extreme levels of ineptitude. Start with the fact that the 'smartest' people are filled with arrogance and hubris but are not actually very smart. Add that many innumerate Politics and English majors have flooded into a field that cries out for engineering calculations. Add to that groupthink and orthodoxy enforcement prevent anyone from pointing out obvious flaws. And then throw in a strong dose of religious zealotry that obstructs the intrusion of anything resembling critical thinking. All in all, it's a prescription for catastrophe."

Menton then brings up deficiencies in the new IEA report with the title "Batteries and Secure Energy Transitions." In a report published by the Global Warming Policy Foundation in December 2022, Menton asked critical questions:

- "Quantitatively, how much energy storage, in watt-hours (or gigawatt-hours) will be necessary to provide full back-up to a national electricity grid once all fossil fuel back-up has been banished and the storage is all that is available when the instantaneous generators are not supplying the full demand?
- How much will that amount of storage cost?
- What is the maximum length of time that energy must be held in storage before it is called upon, and is the proposed storage technology capable of the task of storing energy for that period of time?

There are other comparably important questions, but at least those are absolutely essential.

The IEA Report addresses none of them.

What we get instead is endless happy talk about the wonders of lithium-ion battery technology, how the costs are falling rapidly, how deployments are soaring, and how utopia (i.e., meeting UN COP 28 emissions reduction targets) is right around the corner if only we accelerate the process with massive government 'support.'"

The problem is what type of battery technology is suitable for seasonal needs, such as replenished (recharged) during the summer sun to meet winter needs. There are none. See link under Lowering Standards.

Number of the Week: 32-year-old infants. Robert Bradley points out that the temporary "infant industry" subsidy in the form of the production tax credit to the wind power is now in its 32nd year. Though the wind industry was already thousands of years old, the "infant industry" argument was used to justify the tax credit. Bradley states:

"But nothing is so permanent as a temporary government program,' Milton and Rose Friedman wrote in their 1983 primer, **The Tyranny of the Status Quo**. And regarding government help for a developing business? 'The infant industry argument is a smoke screen,' the husband-and-wife team observed. 'The so-called infants never grow up.'"

See link under Subsidies and Mandates Forever.

NEWS YOU CAN USE:

Science: Is the Sun Rising?

Supersaturation and Critical Size of Cloud Condensation Nuclei in Marine Stratus Clouds By Henrik Svensmark, et al., Geophysical Research Letters, Apr 29, 2024 [H/t Bernie Kepshire] https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024GL108140

Challenging the Orthodoxy -- NIPCC

Climate Change Reconsidered II: Physical Science

Idso, Carter, and Singer, Lead Authors/Editors, Nongovernmental International Panel on Climate Change (NIPCC), 2013

https://www.heartland.org/media-library/pdfs/CCR-II/CCR-II-Full.pdf

 ${\it Summary: \underline{https://www.heartland.org/_template-assets/documents/CCR/CCR-II/Summary-for-\underline{Policymakers.pdf}}$

Climate Change Reconsidered II: Biological Impacts

Idso, Idso, Carter, and Singer, Lead Authors/Editors, Nongovernmental International Panel on Climate Change (NIPCC), 2014

http://climatechangereconsidered.org/climate-change-reconsidered-ii-biological-impacts/

Climate Change Reconsidered II: Fossil Fuels

By Multiple Authors, Bezdek, Idso, Legates, and Singer eds., Nongovernmental International Panel on Climate Change, April 2019

http://climatechangereconsidered.org/climate-change-reconsidered-ii-fossil-fuels/

Why Scientists Disagree About Global Warming

The NIPCC Report on the Scientific Consensus

By Craig D. Idso, Robert M. Carter, and S. Fred Singer, Nongovernmental International Panel on Climate Change (NIPCC), Nov 23, 2015

http://climatechangereconsidered.org/why-scientists-disagree-about-global-warming/

Nature, Not Human Activity, Rules the Climate

S. Fred Singer, Editor, NIPCC, 2008

http://www.sepp.org/publications/nipcc final.pdf

Challenging the Orthodoxy – Radiation Transfer

The Role of Greenhouse Gases in Energy Transfer in the Earth's Atmosphere

By W.A. van Wijngaarden and W. Happer, Preprint, Mar 3, 2023

 $\frac{https://co2coalition.org/wp-content/uploads/2023/11/The-Role-of-Greenhouse-Gases-in-Energy-Transfer-in-the-Earths-Atmosphere.pdf}{}$

Challenging the Orthodoxy

DDP 2024 Annual Meeting

42nd Annual Meeting of Doctors for Disaster Preparedness, July 5-7, 2024 https://www.ddponline.org/2024/04/24/ddp-2024-annual-meeting/

Climate Ideology Ignores Science, Threatens Humanity

By Lee Gerhard, Washington Times, Via CO2 Coalition, May 2, 2024 https://co2coalition.org/2024/05/02/climate-ideology-ignores-science-threatens-humanity/ [SEPP Comment: Geology contradicts climate ideology.]

Testing the hypothesis that CO2 is driving temperatures

Four-minute video, By David Siegle, Accessed Apr 30, 2024 https://www.youtube.com/watch?v=QCO7x6W61wc

Vostok Station from 1958 today less than 1 C, summer and winter, Death Valley 1960 to today, and western Iceland, (Stykkisholmur) 1798 to 2017 (0.8°C/100 years) CO2 well mixed

Water Vapor Absorbs 84 Times More Radiation Than CO2 ... Clouds Drove 89% Of 1982-2018 Warming

By Kenneth Richard, No Tricks Zone, May 2, 2024

https://notrickszone.com/2024/05/02/water-vapor-absorbs-84-times-more-radiation-than-co2-clouds-drove-89-of-1982-2018-warming/

Link to paper: Decoupling CO2 from Climate Change

By Michael Nelson and David B. Nelson, International Journal of Geosciences, March 26, 2024 https://www.scirp.org/pdf/ijg 2024032514494686.pdf

From the abstract: "Even with minimal absorbance, water vapor captures the most infrared radiation. It absorbs 84 times more than CO2 The Intergovernmental Panel on Climate Change (IPCC) and the United States EPA excluded water vapor because it was not associated with man-made activities. They reported that water vapor and clouds were simply feedback mechanisms from CO2."

[SEPP Comment: Using the cloudless sky estimates of van Wijngaarden and Happer from the HITRAN database of the atmosphere, SEPP estimates that CO2 accounts for about 20% of the total greenhouse effect and water vapor about 80%.]

500 Million Years of Unrelatedness between Atmospheric CO2 and Temperature

By John Robson, Climate Discussion Nexus, May 1, 2024

 $\underline{https://climatediscussionnexus.com/2024/05/01/500\text{-}million-years-of-unrelatedness-between-atmospheric-co2-and-temperature/}$

From the CO2Science Archive

ClimateMovie Fact Check: Prehistoric CO2 levels

By John Robson, Climate Discussion Nexus, May 1, 2024

https://climatediscussionnexus.com/2024/05/01/climatemovie-fact-check-prehistoric-co2-levels/

"That means most of the critters around us, including sea creatures, evolved under conditions in which CO2 levels were far higher. Whatever we are doing to add CO2 to the atmosphere, it's nothing that the natural world hasn't seen already."

Post-1980s Increases In Shortwave Radiation Explains Europe's Warming Trends Far Better Than CO2

By Kenneth Richard, No Tricks Zone, Apr 29, 2024

https://notrickszone.com/2024/04/29/post-1980s-increases-in-shortwave-radiation-explains-europes-warming-trends-far-better-than-co2/

Link to paper: Radiation measurements at the WMO/CIMO testbed site Lindenberg By Stefan Wacker, et al., AIP Conference Proceedings, Jan 18, 2024

https://pubs.aip.org/aip/acp/article/2988/1/060022/3022291/Radiation-measurements-at-the-WMO-CIMO-testbed

[SEPP Comment: CIMO is the Commission for Instruments and Methods of Observation.]

Global Temperatures and Reduced Cloud Cover

By Paul Homewood, Not a Lot of People Know That, Apr 29, 2024 https://notalotofpeopleknowthat.wordpress.com/2024/04/29/global-temperatures-and-reduced-cloud-cover/

Defending the Orthodoxy

IPCC Refuses Repeated Calls for Dialogue with Critical Scientists

By Arthur Blok, Liberum, apr 29, 2024

https://theliberum.com/ipcc-refuses-repeated-calls-for-dialogue-with-critical-scientists/

"The Intergovernmental Panel on Climate Change (IPCC) ignores crucial peer-reviewed literature and cherry-picks evidence to promote doom scenarios on climate change. These are just some of the findings of Climate Intelligence (Clintel) founder emeritus professor Guus Berkhout (84) after critically analyzing IPCC's scientific reports. 'They refuse my request for an honest and open debate. The result is a very one-sided, fear-mongering story."

Defending the Orthodoxy – Bandwagon Science

Ice age climate analysis reduces worst-case warming expected from rising CO₂ Press Release by University of Washington, Apr 17, 2024

https://phys.org/news/2024-04-ice-age-climate-analysis-worst.html

Link to paper: Last Glacial Maximum pattern effects reduce climate sensitivity estimates By Vincent Cooper, et al., AAAS, Science Advances, Apr 17, 2024 [H/t Bernie Kepshire] https://www.science.org/doi/10.1126/sciadv.adk9461

From the abstract: Combining the LGM (Last Glacial Maximum) with other lines of evidence, the best estimate becomes 2.9°C, 66% range 2.4° to 3.5°C (2.1° to 4.1°C, 5 to 95%), substantially narrowing uncertainty compared to recent assessments.

[SEPP Comment: Based on the equilibrium climate sensitivity (ECS) calculated with global climate models which give estimates of climate sensitivity to CO2 that are way too high.]

Forbes Calls BS on the latest Climate Economics Doomsday Prediction

By Eric Worrall, WUWT, Apr 30, 2024

https://wattsupwiththat.com/2024/04/30/forbes-calls-bs-on-the-latest-climate-economics-doomsday-prediction/

Link to paper: The economic commitment of climate change

By Maximilian Kotz, Anders Levermann & Leonie Wenz, Apr 17, 2024

https://www.nature.com/articles/s41586-024-07219-0#citeas

[SEPP Comment: Don't bother testing the models against physical evidence, just go with their results.]

Questioning the Orthodoxy

Absorbed solar radiation anomaly challenges the IPCC science

By Antero Ollila, His Blog, Accessed May 1, 2024

https://www.climatexam.com/single-post/absorbed-solar-radiation-anomaly-challenges-the-ipcc-science

[SEPP Comment: Contrary to popular belief, the effect of greenhouse gases is not additive or multiplicative but logarithmic: 1 plus 1 does not equal 2, but something less; 2 times 2 does not equal 4, but something less.]

Coral Bleaching. What They Don't Tell You

By Jennifer Marohasy, Her Blog, Apr 28, 2024

https://jennifermarohasy.com/2024/04/coral-bleaching-what-they-dont-tell-you/

"There was significant coral bleaching this last summer. It was remarkable at the Keppel Islands. But because scientists have been falsely calling it every year, this important fact is likely to be lost to our collective memory. It is also a problem when my colleagues deny this bleaching."

"I suspect that the bleaching at the Keppel Islands this last summer can be blamed on the Moon; specifically, that the lower tides caused by Maximum Lunar Declination combined with a short period of clear skies and no winds caused the water to stay continuously warm for a longer period than usual, in a way that was catastrophic.

That is my hypothesis."

The Social Feedback Loops That Constrain Climate Science

Self-reinforcing feedback loops in the climate system garner a lot of attention, but less-appreciated social feedback loops affect the generation of climate science itself, with real consequences.

By Patrick Brown, Breakthrough Institute, Apr 24, 20224

https://thebreakthrough.org/journal/no-20-spring-2024/the-social-feedback-loops-that-constrain-climate-science

"It has become common to lament the public crisis of trust in science, experts, and institutions, but much of the decline in trust is deserving. When the public senses that researchers and academic journals are attempting to leverage their scientific authority to advance particular political goals, it ironically undermines that very authority. But we need researchers and academic journals to help inform (but not dictate) critical societal decisions. Scientific institutions just must earn back the public's trust by demonstrating intellectual humility, a disinterest in how results come out, and by showing that they are open to a wide diversity of opinion and vigorous debate on contested topics."

Climatism Substitutes for Solving Problems

Interview of Mike Hulme, Via Ron Clutz, his blog, May 3, 2024 https://rclutz.com/2024/05/03/climatism-substitutes-for-solving-problems/

"...belief in the urgent fight against climate change has shot far past the territory of science and become an ideology."

Here's How We Know The Climate Crisis Is Not About The Climate

I & I Editorial Board, May 3, 2024

 $\underline{https://issuesinsights.com/2024/05/03/heres-how-we-know-the-climate-crisis-is-not-about-the-climate/}$

Earth snooze

By John Robson, Climate Discussion Nexus, May 1, 2024 https://climatediscussionnexus.com/2024/05/01/earth-snooze/

"It's a sorry spectacle and nearly every individual thing they say including about "forever chemicals" and your non-stick frying pan radiating evil death is wrong. Fracking did not cause tap water to burst into flames. Nuclear power is not just one Chernobyl after another."

Climate Change Weekly #504: Climate Solutions Cause Environmental Damage and Hazards

By H. Sterling Burnett, environment & Climate News, Apr 25, 2024 https://heartlanddailynews.com/2024/04/climate-change-weekly-504-climate-solutions-cause-environmental-damage-and-hazards/

Energy & Environmental Review: April 29, 2024

By John Droz, Jr., Master Resource, April 29, 2024

 $\frac{https://www.masterresource.org/alliance-for-wise-energy-decisions/energy-environmental-review-04-29-2024/$

After Paris!

The Azerbaijanis, Not the Azeris, Are Hosting COP29

By Brenda Shaffer & Damjan Krnjević Mišković, Real Clear Energy, May 01, 2024 https://www.realclearenergy.org/articles/2024/05/01/the_azerbaijanis_not_the_azeris_are_hosting_cop29_1028768.html

Problems in the Orthodoxy

A glimpse inside Dubai's futuristic new airport, set to be the biggest on Earth

By Paul Homewood, Not a Lot of People Know That, Apr 29, 2024

https://notalotofpeopleknowthat.wordpress.com/2024/04/29/a-glimpse-inside-dubais-futuristic-new-airport-set-to-be-the-biggest-on-earth/

"Located 28 miles south-west of Dubai, Al Maktoum International Airport will have the largest capacity of any on Earth, with the potential to carry up to 260 million passengers per year. It will replace the existing Dubai International Airport, already the busiest in the world for international traffic, handling 87 million passengers in 2023. Only Atlanta's Hartsfield-Jackson airport is busier, with 105 million mostly domestic passengers in 2023.""

Coal India Ltd Increased Coal Output By 10% Last Year

By Paul Homewood, Not a Lot of People Know That, Apr 30, 2024

 $\underline{https://notalotofpeopleknowthat.wordpress.com/2024/04/30/coal-india-ltd-increased-coal-output-by-10-last-year/}$

Belgium demands probe into "massive" French power export curbs

By Paul Homewood, Not a Lot of People Know That, May 2, 2024

 $\underline{https://notalotofpeopleknowthat.wordpress.com/2024/05/02/belgium-demands-probe-into-massive-french-power-export-curbs/}$

Seeking a Common Ground

Mathematics Is The Universal Language of Pure Logic

By Molly Slag, American Thinker, Apr 27, 2024

https://www.americanthinker.com/articles/2024/04/mathematics_is_the_universal_language_of_pure_logic.html

Science, Policy, and Evidence

Congress Approves Ban on Imports of Enriched Uranium From Russia

By Sonal Patel, Power Mag, May 2, 2024

https://www.powermag.com/congress-approves-ban-on-imports-of-enriched-uranium-from-russia/?oly enc id=7809H6412578J0B

"It specifies that 90 days after the bill's enactment, no unirradiated low-enriched uranium that is produced in the Russian Federation or by a Russian entity can be imported into the U.S. "Unirradiated' means fresh fuel that has not yet been used in a reactor, while 'low-enriched uranium' refers to uranium products in any form, including uranium hexafluoride (UF6) and uranium oxide (UO2), in which uranium contains less than 20% uranium-235 (U-235)."

Model Issues

CMIP6 Runs Running Wild

By Willis Eschenbach, WUWT, May 3, 2024

https://wattsupwiththat.com/2024/05/03/cmip6-runs-running-wild/

[SEPP Comment: The model forecasts are similar, only the model histories diverge?]

Efficient spin-up of Earth System Models using sequence acceleration

By Samar, Khatiwala, AAAS Science Advances, May 1, 2024

https://www.science.org/doi/10.1126/sciadv.adn2839

Comment by Richard Courtney: "So, the method assumes there was a 'pre-industrial equilibrium' and provides a faster calculation of the assumed 'equilibrium'. But we know there was **not** such a 'pre-industrial equilibrium' because evolution would have ceased if such an 'equilibrium' existed, and evolution continued.

Doing the wrong thing faster does not make it right.

Measurement Issues -- Surface

ENSO: Recent Evolution, Current Status and Predictions

By Staff, Climate Prediction Center / NCEP, NOAA, Apr 29, 2024

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcstsweb.pdf

[SEPP Comment: The Mar 31 to Apr 27 graph on equatorial sea surface temperature anomalies in the tropical Pacific shows the cold tongue of the La Niña appearing off Peru and the warm anomaly moving further west.]

The Heart of Climate Deception Temperature

By Paul Homewood, Not a Lot of People Know That, Apr 28, 2024

 $\underline{https://notalotofpeopleknowthat.wordpress.com/2024/04/28/the-heart-of-climate-deception-temperature/}$

"This [Video] is a very thorough summary of a number of issues surrounding global temperature measurements."

Measurement Issues -- Atmosphere

UAH Global Temperature Update for April,2024: +1.05 deg. C

By Dr. Roy Spencer, His Blog, May 2, 2024

 $\underline{https://www.drroyspencer.com/2024/05/uah-global-temperature-update-for-april-2024-1-05-deg-c/}$

Measurement Issues - Energy Flow

Keeping It In Balance

By Willis Eschenbach, WUWT, May 1, 2024

https://wattsupwiththat.com/2024/05/01/keeping-it-in-balance/

"So, I knew that if you want to analyze a heat engine, you need to do your calculations in the Kelvin temperature scale. You can't use either Celsius or Fahrenheit. All of the thermal equations require that you use Kelvin (abbreviated "K")."

Changing Weather

#GettingWorse: Fatality rates from climate disasters

By John Robson, Climate Discussion Nexus, May 1, 2024

 $\underline{https://climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-rates-from-climatediscussionnexus.com/2024/05/01/gettingworse-fatality-fatality-fatality-fatality-fatality-fatality-fatality-fat$

Link to: Empirical evidence of declining global vulnerability to climate-related hazards

By Giuseppe Formetta and Luc Feyen, Global Environmental Change, July 2019

https://www.sciencedirect.com/science/article/pii/S0959378019300378

Changing Seas

A Global Increase in Nearshore Tropical Cyclone Intensification

By Karthik Balaguru, et al., AGU, Earth's Future, May 20, 2024

https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2023EF004230

Climate Change: A Natural Hazard – A Note from Bill Kininmonth

By Jennifer Marohasy, Her Blog, May 2, 2024

https://jennifermarohasy.com/2024/05/climate-change-a-natural-hazard-a-note-from-bill-kininmonth/

"I have read media coverage of claimed 'global' coral bleaching that is being attributed to anthropogenic global warming. From the graphs [Sea Surface/Skin] it can be seen that neither the recent temperatures nor the temperature anomalies are the highest of the recent 45 years. The recent temperature spikes are, however, associated with a major El Nino event, which is rapidly decaying."

Ocean Cooling Continues March 2024

By Ron Clutz, His Blog, May 2, 2024

https://rclutz.com/2024/05/02/ocean-cooling-continues-march-2024/

Changing Cryosphere – Land / Sea Ice

Oldest Antarctic ice poses climate puzzle

By David Whitehouse, Net Zero Watch, Apr 29, 2024

https://www.netzerowatch.com/all-news/oldest-antarctic-ice-poses-climate-puzzle

Link to abstract of presentation: Late Pliocene and Early Pleistocene CO2 and CH4 from ice cores from the Allan Hills, Antarctica

By Julia Marks Peterson, et al., Abstract EGU24-6781, April 14-19, 2024 https://meetingorganizer.copernicus.org/EGU24/EGU24-6781.html

Polar bears are going extinct? Actually, they're not! A new video worth watching and sharing

By Susan Crockford, Polar Bear Science, Apr 28, 2024

https://polarbearscience.com/2024/04/28/polar-bears-are-going-extinct-actually-theyre-not-anew-video-worth-watching-and-sharing/

April 2024 Arctic Ice Seesaw

By Ron Clutz, His Blog, May 2, 2024

https://rclutz.com/2024/05/02/april-2024-arctic-ice-seesaw/

Nature Publication: Researchers Find Arctic Region 10,000 Years Ago Warmer Than Today By P Gosselin, No Tricks Zone, Apr 27, 2024

https://notrickszone.com/2024/04/27/nature-publication-researchers-find-arctic-region-10000-years-ago-warmer-than-today/

Link to paper: **Seasonal sea-ice in the Arctic's last ice area during the Early Holocene** By Henrieka Detlef, et al., Nature, Communications Earth & Environment, Mar 20, 2024 https://www.nature.com/articles/s43247-023-00720-w

Changing Earth

The Fate of Atlantis?

Top 10 Sinking Cities: Are Humans to Blame?

By John Robson, Climate Discussion Nexus, Apr 26, 2024

https://climatediscussionnexus.com/videos/the-fate-of-atlantis/

[SEPP: Comment: Reminds us that satellite measurements of changing sea levels have 1 inch (3cm) precision and that in many areas land is sinking from is from groundwater extraction and geothermal drilling.]

Supercomputer predicts humans will face a 'triple whammy' extinction event

By Hiyah Zaidi, Metro, UK, May 1, 2024 [H/t Bernie Kepshire]

https://metro.co.uk/2024/05/01/supercomputer-predicts-humans-will-face-a-triple-whammy-extinction-event-20754691/

Link to latest paper by author identified a lead author: Absolute age and temperature of belemnite rostra: Constraints on the Early Cretaceous cooling event

By Tianyang Wang, et al., Global and Planetary Change, February 2024

https://research-information.bris.ac.uk/en/publications/absolute-age-and-temperature-of-belemnite-rostra-constraints-on-t

[SEPP Comment: Most life will end when the continents come crashing together again!]

Acidic Waters

Fundamentals of Ocean pH

By R. Cohen and W. Happer, Sept 18, 2015

 $\frac{https://co2coalition.org/wp-content/uploads/2021/11/2015-Cohen-Happer-Fundamentals-of-Ocean-pH.pdf}{Ocean-pH.pdf}$

Lowering Standards

A Shockingly Inept Report From The IEA On Battery Storage Of Energy

By Francis Menton, Manhattan Contrarian, Apr 27, 2024

https://www.manhattancontrarian.com/blog/2024-4-27-a-shockingly-inept-report-on-battery-storage-of-energy-from-t

[SEPP Comment: Explains that to avoid blackouts, wind and solar must have huge amounts long-term storage backup, for which the battery technology does not exist.]

National Grid's Claims On Interconnectors Not Credible

By Paul Homewood, Not a Lot of People Know That, Apr 29, 2024

 $\underline{https://notalotofpeopleknowthat.wordpress.com/2024/04/29/national-grids-claims-on-interconnectors-not-credible/}$

Communicating Better to the Public – Use Yellow (Green) Journalism?

Another reefer

By John Robson, Climate Discussion Nexus, May 1, 2024

https://climatediscussionnexus.com/2024/05/01/another-reefer/

"If they had Google on their computers, they might know a few things they currently don't. Starting with coral having evolved in a warmer world and doing best, as we're tempted to say any fool knows, where it's warmer today."

Climate change could virtually disappear in Florida — at least according to state law By Brendan Farrignton, AP, Apr 30, 2024 [Bernie Kepshire]

https://news.yahoo.com/climate-change-could-virtually-disappear-203742780.html

"The enormous energy legislation he [Rep. Bobby Payne] shepherded through the Legislature prevents local governments from enacting some energy policy restrictions and de-emphasizes clean energy by banning wind energy turbines or facilities off or within a mile (less than 2 kilometers) of the coast."

Red-faced planet

By John Robson, Climate Discussion Nexus, May 1, 2024 https://climatediscussionnexus.com/2024/05/01/red-faced-planet/

Decades ago it was OK for scientific publications and academic outlets to claim it was warming on Triton, Neptune's largest moon. And mainstream media outlets, in this case ABC, could write things like "It might seem like the weather's getting warmer here on Earth, but Mars appears to have an even bigger global warming problem." Nowadays shtum. Or worse: CBS now assures us that the fate of Mars "may offer an example of the damage that can occur to life itself because of the greenhouse gas effect." See, it cooled lethally because of methane and thus a computer says our planet will warm lethally because of it. QED.

Tidbits

By John Robson, Climate Discussion Nexus, May 1, 2024 https://climatediscussionnexus.com/2024/05/01/tidbits-60/

Happy Hump Day

By John Robson, Climate Discussion Nexus, May 1, 2024

https://climatediscussionnexus.com/2024/05/01/happy-hump-day/

Of course, the fact that drought is not increasing globally doesn't mean it isn't increasing in some particular place. We're not the ones who deny that weather is variable, including over long periods and big areas.

Communicating Better to the Public – Exaggerate, or be Vague?

Gas stove emissions increasing childhood asthma rates, adult deaths: Stanford study By Sharon Udasin, The Hill, May 3, 2024

 $\frac{https://thehill.com/policy/energy-environment/4641542-gas-stove-emissions-childhood-asthma-rates-adult-deaths-stanford-study/$

Link to paper: Nitrogen dioxide exposure, health outcomes, and associated demographic disparities due to gas and propane combustion by U.S. stoves.

By Yannai Kashtan, et al., AAAS Science Advances, May 3, 2024

https://www.science.org/doi/10.1126/sciadv.adm8680?adobe_mc=MCMID%3D40492223762678813094179935343930461256%7CMCORGID%3D242B6472541199F70A4C98A6%2540AdobeOrg%7CTS%3D1714754733

From the abstract: "We estimate NO2 exposure and health consequences using emissions and concentration measurements from >100 homes, a room-specific indoor air quality model, epidemiological risk parameters, and statistical sampling of housing characteristics and occupant behavior. Gas and propane stoves increase long-term NO2 exposure 4.0 parts per billion volume on average across the United States, 75% of the World Health Organization's exposure guideline. This increased exposure likely causes ~50,000 cases of current pediatric asthma from long-term NO2 exposure alone. Short-term NO2 exposure from typical gas stove use frequently exceeds both World Health Organization and U.S. "

[SEPP Comment: The health risks are speculation.]

US Republicans vote to remove wolf protections

By AFP Staff, Via phys.org, May 1, 2024

https://phys.org/news/2024-05-republicans-vote-wolf.html

[SEPP Comment: Another organization that does not understand language or science. Bill Balgord pointed out that the correct term for removing or eliminating animals in certain areas is extirpation, not extinction as used in the article.]

Communicating Better to the Public – Make things up.

Compound wind and rainfall extremes: Drivers and future changes over the UK and Ireland

By Colin Manning, et al., Weather and Climate Extremes, June 2024 [H/t Bernie Kepshire] https://www.sciencedirect.com/science/article/pii/S2212094724000343?via%3Dihub

From the abstract: "Further work is needed to understand the uncertainty in the future response by sampling additional climate models."

[SEPP Comment: Sampling models that fail achieves nothing about nature,]

Mali's "Impossible Heatwave" Was Not Even A Record

By Paul Homewood, Not a Lot of People Know That, Apr 30, 2024

 $\underline{https://notalotofpeopleknowthat.wordpress.com/2024/04/30/malis-impossible-heatwave-was-not-even-a-record/}$

The In-depth Story Behind the 97% of Scientists Climate Myth

By Charles Rotter, WUWT, May 1, 2024

 $\underline{https://wattsupwiththat.com/2024/05/01/the-in-depth-story-behind-the-97-of-scientists-climate-fraud/}$

Transcript of the four-year-old video.

Communicating Better to the Public - Go Personal.

The Climate Empire Strikes Back

By Tony Heller, His Blog, Apr 30, 2024

https://realclimatescience.com/2024/04/the-climate-empire-strikes-back/#gsc.tab=0

Video: "Since Climate The Movie was released, the personal attacks I'm receiving have become even sillier than they used to be."

[SEPP Comment: Heller appeared in a number of segments in the movie.]

Communicating Better to the Public – Use Propaganda

The High Price of Climate Alarm

By H. Sterling Burnett, Environment & Climate News, May 3, 2024

https://heartlanddailynews.com/2024/05/climate-change-weekly-505-the-high-price-of-climate-alarm/

BBC Did Change Their Temperature Colours

By Paul Homewood, Not a Lot of People Know That, May 3, 2024

https://notalotofpeopleknowthat.wordpress.com/2024/05/03/bbc-did-change-their-temperature-colours/

Coral Reefs are as Good as Dead, so We Don't have to Try Anymore?

By Eric Worrall, Apr 29, 2024

https://wattsupwiththat.com/2024/04/29/claim-coral-reefs-are-as-good-as-dead-so-we-dont-have-to-try-anymore/

[SEPP Comment; The hottest sea in the world is the Coral Sea. Apparently, climate commentators cannot figure out why.]

Major NY wind projects recently canceled, but media spin at full-power

By Kathleen Marquardt, CFACT, Apr 28, 2024

 $\underline{https://www.cfact.org/2024/04/28/major-ny-wind-projects-recently-canceled-but-media-spin-at-full-power/}$

Expanding the Orthodoxy

G7 to phase out coal-fired power plants by mid-2030s

By Ella IDE, Turin, Italy (AFP) April 30, 2024

https://www.energy-daily.com/reports/G7_to_phase_out_coal-fired_power_plants_by_mid-2030s_999.html

The G7's Latest Absurdly Ambitious Climate Pronouncements

By Charles Rotter, WUWT, May 2, 2024

 $\underline{https://wattsupwiththat.com/2024/05/02/the-g7s-latest-absurdly-ambitious-climate-pronouncements/}$

Questioning European Green

Green Revolution Causes Economy To Bleed To Death

Germany's Economic Bloodbath Worsens As Green Revolution Causes Economy To Bleed To Death

By P Gosselin, No Tricks Zone, May 3, 2024

https://notrickszone.com/2024/05/03/germanys-economic-bloodbath-worsens-as-green-revolution-causes-economy-to-bleed-to-death/

"The business climate index, an important barometer for the mood in small and medium-sized enterprises, fell to an alarming low of minus 1.4 points in February," Blackout News reports here. "This is the lowest level since the financial crisis 15 years ago. A survey of around 1250 companies conducted by Creditreform Wirtschaftsforschung shows that the majority of respondents forecast a gloomy future for the SME sector."

The Green Agenda Will Lead to Civil War

By Ben Pile, The Daily Sceptic, Apr 26, 2024

https://dailysceptic.org/2024/04/26/the-green-agenda-will-lead-to-civil-war/

"This is a war of some kind, and it is bound to get hotter until politicians put the climate agenda to a full and proper democratic contest."

The Case Against Net Zero

By Robin Guenier, The Daily Sceptic, Apr 30, 2024 [H/t Paul Homewood]

https://dailysceptic.org/2024/04/30/the-case-against-net-zero/

Questioning Green Elsewhere

Mark Carney's Economic "Lookahead" Lecture Becomes Unhinged on NetZero says Friends of Science Society

Press Release, Friends of Science Society, Apr 29, 2024

https://www.prweb.com/releases/mark-carneys-economic-lookahead-lecture-becomes-unhinged-on-netzero-says-friends-of-science-society-302129250.html

As the US follows Germany's green deal, YOU should anticipate uncontrollable electricity prices

By Ronald Stein, America Out Loud, Apr 29, 2024

https://www.americaoutloud.news/as-the-us-follows-germanys-green-deal-you-should-anticipate-uncontrollable-electricity-prices/

Conrad Black: Washing away the climate lunatics

Canada at risk of turning into Europe

By Conrad Blick, National Post, Apr 27, 2024

https://nationalpost.com/opinion/conrad-black-5

Green Jobs

German solar industry collapsing: unable to make solar panels from solar power By Jo Nova, Her Blog, May 1, 2024

https://joannenova.com.au/2024/05/german-solar-industry-collapsing-unable-to-make-solar-panels-from-solar-power/

"About 90% of solar panels installed in Germany come from China, and earlier this year one of the last solar panel manufacturers closed in Germany. Last week, what was left of the industry begged for mercy (and subsidies) which they didn't get. Now another German solar panel manufacturer has closed down."

Non-Green Jobs

Democrats in oil-rich state tossing grenade at 'pillar' of economy

Taking aim at industry that supports 303,000 jobs

By Bernard Weinstein, Real Clear Wire, Via WND, Apr 27, 2024

https://www.wnd.com/2024/04/democrats-oil-rich-state-tossing-grenade-pillar-economy/?utm_source=wnd-news-

alerts.beehiiv.com&utm_medium=newsletter&utm_campaign=morning-news-alert-4-28-2024

The Political Games Continue

Poll deniers

By John Robson, Climate Discussion Nexus, May 1, 2024 https://climatediscussionnexus.com/2024/05/01/poll-deniers/

"Here it's important to realize how little there is to show for a quarter-century of almost unopposed militant climate policy."

Climate Obsessed Democrats Demand an Oil Exploration Halt in the Middle of a Gasoline Price Crisis

By Eric Worrall, WUWT, May 2, 2024

https://wattsupwiththat.com/2024/05/02/climate-obsessed-democrats-demand-an-oil-exploration-halt-in-the-middle-of-a-gasoline-price-crisis/

Manchin blasts leeway in Biden's EV tax credit rule: 'Outrageous and illegal'

By Rachel Frazin, The Hill, May 3, 2024

https://thehill.com/policy/energy-environment/4641605-manchin-biden-ev-tax-credit-rule-leeway-outrageous-illegal/

[SEPP Comment: Manchin got "played."]

Litigation Issues

Appeals court rejects climate change lawsuit by young Oregon activists against US government

By Staff, KGW8-TV, Portland, May 1, 2024

https://www.kgw.com/article/tech/science/environment/appeals-court-rejects-climate-change-lawsuit-young-oregon-activists-us-government/283-e6963347-4e05-44b8-b4dc-fc309584dc61

Subsidies and Mandates Forever

Permanent Subsidy? Industrial Wind's PTC (14 Extensions)

By Robert Bradley Jr., Master Resource, May 2, 2024

https://www.masterresource.org/production-tax-credit-ptc/wind-ptc-14-extensions/

Net Zero Watch brands new windfarm subsidy 'obscene'

Press Release, Net Zero Watch, Apr 29, 2024

https://www.netzerowatch.com/all-news/new-windfarm-subsidy-obscene

"Net Zero Watch has revealed the astonishing scale of subsidies likely to be received by a windfarm planned for Scottish waters. The Green Volt floating offshore windfarm could hand its backers around £500 million pounds per year in subsidies. The project received official approval from Marine Scotland last week. "

[SEPP Comment: The assumed capacity factor of 57% (while onshore wind is about 34%) is from Hywind floating windfarm with 5 floating turbines. Green Volt will have 35 floating turbines.]

https://www.statista.com/statistics/183680/us-average-capacity-factors-by-selected-energy-source-since-1998/

EPA and other Regulators on the March

EPA's Electric Rationing Madness Short Circuits Any Benefit

By Larry Bell, Newsmax, Apr 29, 2024

https://www.newsmax.com/larrybell/epa-electric-vehicles-bidenadministration/2024/04/29/id/1162778/

Progress on Proposed Lithium Mine? BLM Ruling Will Affect How Mining Plays Out

By Jim Constantopoulos, Real Clear Energy, May 02, 2024

https://www.realclearenergy.org/articles/2024/05/02/progress_on_proposed_lithium_mine_blm_r uling will affect how mining plays out 1029164.html

To Appease Environmentalists, the FTC Will Cripple U.S. Energy

By Justin Bis, Real Clear Markets, Apr 20, 2024

https://www.realclearmarkets.com/articles/2024/04/20/to_appease_environmentalists_the_ftc_will cripple us energy 1026313.html

"Rather than fostering competition and protecting consumers, the FTC's wonton use of authority stifles innovation, threatens American security, and undermines the vitality of a critical sector of our economy. Instead of focusing on unnecessary market interventions, policymakers should prioritize policies that promote innovation, encourage investment, and ensure a level playing field for all participants in the oil and gas industry."

Energy Issues – Non-US

The Agile Octopus Freeloader Problem

Who is paying for the "free" electricity from the Agile Octopus tariff? By David Turver, Eigen Values, Apr 28, 2024

https://davidturver.substack.com/p/agile-octopus-freeloader-problem

"Free electricity sounds too good to be true. Agile Octopus customers benefit from "price plunges" at times of low demand and high renewables generation. Then the rest of us pick up the tab for the subsidies paid to the wind and solar generators. It certainly looks like Agile Octopus customers are freeloading off the rest of us - another example of something sounding too good to be true not being quite as advertised."

UK energy sector paralyzed by political uncertainty

By John Constable, Net Zero Watch, May 2, 2024

https://www.netzerowatch.com/all-news/deltic-warning-policy-uncertainty

[SEPP Comment: Perhaps being paralyzed is better than the direction it was headed.

Claire Coutinho Replies!

By Paul Homewood, Not a Lot of People Know That, May 2, 2024

https://notalotofpeopleknowthat.wordpress.com/2024/05/02/claire-coutinho-replies/

"Thank you for your email of 4 March regarding the UK's net zero policy. I am responding in my capacity as both your constituency MP and Secretary of State at the Department for Energy Security and Net Zero. Please accept my apologies for the delay in my response."

Tidal & Geothermal CfD Prices

By Paul Homewood, Not a Lot of People Know That, May 3, 2024

https://notalotofpeopleknowthat.wordpress.com/2024/04/28/tidal-geothermal-cfd-prices/

"These are at 2012 prices. I don't have the 2024 indexation yet, but at 2023 prices tidal will cost £358/MWh, and geothermal £216/MWh.

While Claire Coutinho is patting herself on the back for introducing all of this wonderful low carbon technology, our energy bills will incur the cost!"

[SEPP Comment: See link immediately above.]

Energy Issues – Australia

Wild Experiments? Alice Springs fossil fuel grid becomes too unstable with more than 13% solar power

Ponder how destructive solar power is: It only takes 13% solar to push a small grid to the edge By Jo Nova, Her Blog, May 3, 2024

https://joannenova.com.au/2024/05/wild-experiments-alice-springs-fossil-fuel-grid-becomes-too-unstable-with-more-than-13-solar-power/

[SEPP Comment: Something that "energy experts" in Australia and Washington fail to understand: unstable electricity generation makes the grid unstable.]

Energy Issues -- US

The Looming Electrical Power Shortage

By Steve Goreham, Washington Examiner, Via WUWT, May 2, 2024 https://wattsupwiththat.com/2024/05/02/the-looming-electrical-power-shortage/

Costly Energy Mistakes Are Doing Nothing for the Climate – But Are Raising Bills and Making Energy Less Reliable

By David Holtm Real Clear Energy, May 01, 2024

https://www.realclearenergy.org/articles/2024/05/01/costly_energy_mistakes_are_doing_nothing_for the climate_but are raising bills and making energy less reliable 1028771.html

We Should Build a Grid System as Strong as Our Interstate Highways

By Christina Hayes, Real Clear Energy, April 29, 2024

https://www.realclearenergy.org/articles/2024/04/29/we_should_build_a_grid_system_as_strong as our interstate highways 1028249.html

These technologies are more expensive than traditional ACSR [aluminum conductor steel-reinforced cable] but have several important benefits: they are more efficient in the amount of energy they can carry by voltage when compared with older lines. They sag less, decreasing the likelihood that they touch off wildfires on nearby vegetation. They also decrease line losses, saving customers money on future electricity bills.

New York cities plagued by blackouts due to climate change, study finds

By Saul Elbein, The Hill, May 1, 2024

 $\underline{https://thehill.com/policy/equilibrium-sustainability/4636172-new-york-cities-blackouts-climate-change-study/}$

Link to paper: Powerless in the storm: Severe weather-driven power outages in New York State, 2017–2020

By Nina M. Flores, PLOS Climate, May 1, 2024

https://journals.plos.org/climate/article?id=10.1371/journal.pclm.0000364

"Here, we pair hourly power outage data in electrical power operating localities (n = 1865) throughout NYS with urbanicity, CDC Social Vulnerability Index, and hourly weather (temperature, precipitation, wind speed, lightning strike, snowfall) data."

[SEPP Comment: Three year "climate change"? The failure of proper maintenance is from climate change? Wait until NYC becomes dependent on weather-dependent electricity to avoid severe weather.]

Don't Let Colorado Become the Next Energy Crisis State

By Kathleen Curry, Real Clear Energy, May 02, 2024

https://www.realclearenergy.org/articles/2024/05/02/dont_let_colorado_become_the_next_energy_orisis_state_1028923.html

"However, recent debates in Denver have emerged that would go further than ever before in restricting energy development in the state, including some going as far as ending all permits for oil and gas within five years."

Forget Picking Winners and Losers, American Clean Energy Innovation Wins Every Time By Heather Reams & John Szoka, Real Clear Energy, May 01, 2024

https://www.realclearenergy.org/articles/2024/05/01/forget_picking_winners_and_losers_americ an clean energy innovation wins every time 1028775.html

[SEPP Comment: Waiting to see the clean energy solution to clean energy's major problem – needs storage.]

Washington's Control of Energy

Inflation Reduction Act Guidebook

The White House, Update Sep 21, 2023

https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/

Nuclear Energy and Fears

Vogtle Unit 4 Achieves Commercial Operation, Now Largest Nuclear Power Plant in the U.S.

By Aaron Larson, Power Mag, Apr 29, 2924

https://www.powermag.com/vogtle-unit-4-achieves-commercial-operation-now-largest-nuclear-power-plant-in-the-u-s/?oly enc id=7809H6412578J0B

[SEPP Comment The total cost is not reported.]

Scandal over Nuclear Phase-Out in Germany: What We Know

By Sabine Hossenfelder, Video, 6 min, Accessed Apr 30, 2024

https://www.youtube.com/watch?v=H aVaMbf8Dg

Link to updated graphs from Clean Energy Wire: **Germany's energy consumption and power** mix in charts

By Kerstine Appunn, et al., Clean Energy Wire, Apr 4, 2024

https://www.cleanenergywire.org/factsheets/germanys-energy-consumption-and-power-mix-charts

German greens accused of lying over nuclear power safety to force plant shutdowns

By Matt Oliver, The Telegraph, Apr 26, 2024 [H/t Bernie Kepshire]

https://news.yahoo.com/german-greens-accused-lying-over-

<u>114808219.html?guccounter=1&guce_referrer=aHR0cDovL21haWwuaGFhcGFsYS5jb20v&guce_referrer_sig=AQAAAFAoyEkVRIEBA-</u>

 $\frac{TJV2yDtVzJ79op5yF72BahAC2bOZWOaXOBJuZ2ZTSzRmK3usz-721mEjERXltoSzqN-mePOgv4CzD3bWwuh1XMvdOl5Y_R2-h87Us1vao3zGMVFI-yGBz-HzeH4w-XPDfBzuKRIXq38ZI5ipBBppRPH0rs06tg$

Alternative, Green ("Clean") Solar and Wind

'Environmental Pollutant'—How a Key Climate Agenda Tool Harms Endangered Species An effort to create 'carbon-free energy' is resulting in the injury and death of sea creatures, including protected ones.

By Donna Andersen, The Epoch Times, Apr 27, 2024 [H/t Bernie Kepshire]

https://www.theepochtimes.com/article/environmental-pollutant-how-a-key-climate-agenda-tool-harms-endangered-species-

5637456?utm_source=Morningbrief&src_src=Morningbrief&utm_campaign=mb-2024-04-28&src_cmp=mb-2024-04-

"Intense noise causes hearing loss in whales, other marine mammals, turtles, and fish, compromising their ability to navigate, avoid danger, detect predators, and find prey, according to scientific studies."

"The Marine Mammal Protection Act (MMPA) makes it illegal to kill, hunt, capture, or harass a marine mammal. Killing or injuring a mammal is considered a Level A harassment under the 1972 law. Level B harassment includes actions that disrupt an animal's normal behavior, including migration, breathing, nursing, breeding, feeding, or sheltering."

Build It, And The Wind Won't Come

Weather-dependent generation sources are...weather dependent: Last year, despite adding 6.2 GW of new capacity, U.S. wind production dropped by 2.1%.

By Robert Bryce, His Blog, May 1, 2024

https://robertbryce.substack.com/p/build-it-and-the-wind-wont-come

NOAA Permits Wind Energy Operators to Harass and Kill Whales

Wind energy companies are complicit in a state-sanctioned, modern-day butchery of marine mammals along the U.S. East Coast

By Vijay Jayaraj, California Globe, Apr 29, 2024

https://californiaglobe.com/fr/noaa-permits-wind-energy-operators-to-harass-and-kill-whales/

Offshore wind is gearing up to bulldoze the ocean

By David Wojick, CFACT, May 1, 2024

https://www.cfact.org/2024/05/01/offshore-wind-is-gearing-up-to-bulldoze-the-ocean/

"I've Been Totally Ghosted": After Install, Solar Panels Become Maintenance Nightmare By Tyler Durden, Zero Hedge, May 3, 2024 [H/t Bernie Kepshire]

https://www.zerohedge.com/markets/ive-been-totally-ghosted-after-install-solar-panels-become-maintenance-nightmare

Alternative, Green ("Clean") Energy -- Other

Airlines Launch Effort Backing Green Jet Fuel Tax Credit That Could Raise Food Prices For Americans

By Robert Schmad, The Daily Calller, Apr 29, 2024

https://dailycaller.com/2024/04/29/airlines-effort-jet-fuel-tax-credit-food-prices/

Renewable energy is too expensive to make "green hydrogen" — Twiggy goes to Arizona instead

By Jo Nova, Her Blog, Apr 30, 2024

https://joannenova.com.au/2024/04/renewable-energy-is-too-expensive-to-make-green-hydrogen-twiggy-goes-to-arizona-instead/

"Only 18 months ago the Australian government gave \$14 million dollars to Andrew "Twiggy" Forrest to figure out if his team could build a 500MW electrolyser to make hydrogen gas on an island near Brisbane. It was going to be a glorious Australian green-techno future, the largest hydrogen plant in the world, but it's missed three deadlines in the last three months to greenlight the project. Instead the Australian company is going overseas.

As Nick Cater points out this part of the made-in-Australia renewable superpower is going to be made-in-Arizona because they still have cheap electricity — a miraculous 7.5c a kilowatt hour!"

Alternative, Green ("Clean") Vehicles

Ford Lost \$65,272 For Every EV It Sold In 1Q24. By Robert Bryce, His Blog, Apr 28, 2024 <a href="https://robertbryce.substack.com/p/ford-lost-65272-for-every-ev-it-sold?utm_source=post-email-title&publication_id=630873&post_id=144106292&utm_campaign=email-post-title&isFreemail=true&r=f7h7&triedRedirect=true&utm_medium=email

CNN: \$132,000 Loss on Every Sale of an Electric Ford Vehicle

By Eric Worrall, WUWT, Apr 28, 2024

https://wattsupwiththat.com/2024/04/28/cnn-132000-loss-on-every-sale-of-an-electric-ford-vehicle/

[SEPP Comment: Great photo of the experimental **1914** Ford electric car with engineer Fred Allison.]

https://www.hemmings.com/stories/2010/05/25/henry-ford-and-the-electric-car

EV Hell continues: Crash victims might have to be "left to die", Hertz dumps another 10,000 cars, Tesla sacks whole charging team

By JO Nova, Her Blog, May 2, 2024

https://joannenova.com.au/2024/05/ev-hell-continues-crash-victims-might-have-to-be-left-to-die-hertz-dumps-another-10000-cars-tesla-sacks-whole-charging-team/

The Used EV Timebomb

By Paul Homewood, Not a Lot of People Know That, May 1, 2024 https://notalotofpeopleknowthat.wordpress.com/2024/05/01/the-used-ev-timebomb/

The Electric Bus Debacle in Antelope Valley: A Case Study in Premature Policy Implementation

By Will Conybeare, KTLA-TV, Via WUWT, Apr 28, 2024

https://wattsupwiththat.com/2024/04/28/the-electric-bus-debacle-in-antelope-valley-a-case-study-in-premature-policy-implementation/

From the article: "The suspension, importantly, did not impact AVTA's local service nor their use of BYD zero-emission battery electric buses, suggesting a specific issue with the MCI D45 models."

Carbon Schemes

Britain must spend £30bn to strip CO2 from atmosphere and hit net zero, experts warn By Paul Homewood, Not a Lot of People Know That, Apr 29, 2024

 $\underline{https://notalotofpeopleknowthat.wordpress.com/2024/04/29/britain-must-spend-30bn-to-strip-co2-from-atmosphere-and-hit-net-zero-experts-warn/}$

California Dreaming

'Snow deluge' years on the decline across the US West, thanks to climate change: Study By Sharon Udasin, The Hill, Apr 29, 2024

https://thehill.com/policy/energy-environment/4629740-snow-deluge-years-decline-us-west-climate-change-study/

Link to paper: California's 2023 snow deluge: Contextualizing an extreme snow year against future climate change

By Adrienne M. Marshall, et al., PNAS, Apr 29, 2024

https://www.pnas.org/doi/10.1073/pnas.2320600121

[SEPP Comment: According to global climate models that fail basic testing.]

The Case for Oil Drilling in California

By Edward Ring, What's Current, Accessed May 1, 2024

https://mailchi.mp/calpolicycenter/whats-current-issue-377661?e=cd9fa89d1e

Health, Energy, and Climate

No Gas and Air For Women Giving Birth in the Eco-Utopian Future

By Sallust, The Daily Sceptic, Apr 28, 2024

https://dailysceptic.org/2024/04/28/no-gas-and-air-in-the-eco-future/

"He claims Entonox use in Scotland is equivalent to 18,000 transatlantic flights."

[SEPP Comment: Entonox is a mixture of nitrous oxide and oxygen used to control pain and anxiety. If the statement is correct, it shows how little Entonox is released in transatlantic flights.]

BELOW THE BOTTOM LINE

Wash Post Editorial Board follows orders of megalomaniac billionaires: 'Humans might need to re-engineer the climate' – Tout injecting '100,000 tons of sulfur per year into lower stratosphere to block solar rays'

By Marc Morano, Climate Depot, Apr 28, 2024

https://www.climatedepot.com/2024/04/28/wash-post-editorial-board-follows-order-of-megalomaniac-billionaires-humans-might-need-to-re-engineer-the-climate-tout-injecting-100000-tons-of-sulfur-per-year-into-lower-stratosphere-to-blo/

[SEPP Comment: Protecting Earth from photosynthesis? The flourishing of life is threatening life?]

Adaptation to Heat: Then and Now

By Robert Bradley Jr., Master Resource, May 3, 2024

https://www.masterresource.org/climate-adaptation/adaptation-before-global-warming-in-one-picture/

[SEPP Comment: Amusing photos]

Artificial Stupidity

By Tony Heller, May 2, 2024

https://realclimatescience.com/2024/05/artificial-stupidity-5/#gsc.tab=0

[SEPP Comment: Drivel from ChatGPT]

PhD "Data/Climate Scientist" Can't Provide Data on Extreme Weather Events

By Robert Bradley Jr., Master Resource, May 1, 2024

https://www.masterresource.org/debate-issues/phd-data-climate-scientist-flunks-linkedin/

Ozone hole: Why Antarctic wildlife is being 'sunburnt'

By Paul Homewood, Not a Lot of People Know That, Apr 27, 2024

https://notalotofpeopleknowthat.wordpress.com/2024/04/27/ozone-hole-why-antarctic-wildlife-is-being-sunburnt/

UQ turns **CO2** into sustainable power

Press Release by University of Queensland, Apr 18, 2024

https://www.uq.edu.au/news/article/2024/04/uq-turns-co2-sustainable-power

"University of Queensland researchers have built a generator that absorbs carbon dioxide (CO2) to make electricity.

Dr Zhuyuan Wang from UQ's Dow Centre for Sustainable Engineering Innovation says the small, proof-of-concept nanogenerator is carbon negative because it consumes the greenhouse gas."

ARTICLES

EPA's Deceptive Climate Regulations Won't Stand in Court

If the major-questions doctrine doesn't kill them, the 'rule against pretext' will.

By Chris Horner, WSJ, May 1, 2024

 $\frac{https://www.wsj.com/articles/bidens-climate-deception-wont-stand-in-court-suite-west-virginia-pretext-regan-0fae5111?mod=hp_opin_pos_5\#cxrecs_s$

TWTW Summary: The Washington attorney writes:

"The Environmental Protection Agency last week finalized a 'suite of rules' governing electricity producers. The EPA first announced these air, soil and water regulations two years ago, as tools to reduce greenhouse-gas emissions by forcing coal-fired power plants to close prematurely. The rules reflect the Biden administration's 'whole of government' approach to imposing its climate agenda, which puts ideological ambition above the limits of congressionally delegated authority.

Soon after the EPA announced this plan in 2022, the U.S. Supreme Court in West Virginia v. EPA struck down the Obama-era Clean Power Plan, which also sought what the agency calls 'generation shifting,' from fossil fuel to renewables. The court found no evidence that Congress had granted the EPA the sweeping power of 'deciding how Americans will get their energy.' This signaled trouble ahead for the Biden strategy, which relied on what was already creative rulemaking in the express pursuit of precisely that goal.

Following that defeat, the EPA labored to shield these rules from that same constitutional challenge. But a standard employed by the Supreme Court against supposedly deceitful conduct during the Trump administration should doom the effort.

In speeches and congressional testimony, EPA officials described this coming 'suite of rules' as using 'all of the tools in our toolbox' to reduce greenhouse-gas emissions. They cited a variety of statutory regimes, including some with no plausible claim to being vehicles for reducing airborne emissions, like the Clean Water Act and a solid-waste law known as the Resource Conservation and Recovery Act.

While the Clean Power Plan's constitutionality was still pending before the Supreme Court, EPA Administrator Michael Regan said the new rules would finish the job the plan began. In saying that the regulatory blitz was synchronized to shut down politically disfavored coal-fired generation plants, Mr. Regan described coerced retirements as 'the best tool for reducing greenhouse gas emissions.'

That is, the laws were enacted for one purpose, and the agency admitted it planned to use them to achieve a different purpose.

Our system of government frowns on regulators' lying about their reason for doing something. Supreme Court precedent is clear that 'an agency must 'disclose the basis' of its action.' In 2019 in Department of Commerce v. New York, the court addressed allegations that the Trump administration included a citizenship question in the 2020 census for reasons beyond those acknowledged in the administrative record. The majority agreed that to determine the real factors driving inclusion of the citizenship question, depositions of senior agency officials were appropriate. Georgetown Adjunct Law Professor Jack Thorlin has described the case as formally unveiling the 'rule against pretext.'

Then the court ruled in West Virginia, finding that the Clean Power Plan's generation-shifting goal presented a 'major question.' That changes the inquiry from whether an agency is lawfully exercising a delegated power to whether Congress delegated such a power to the agency at all. The majority specifically ruled that before employing regulations to compel plant closings, the

EPA must show a clear grant of authority from Congress, which the agency failed to establish and, the court noted, it is unlikely any agency possesses.

Like the Clean Power Plan, the EPA's newly finalized replacement rule requires adoption of technology that doesn't exist. More remarkably, the agency simultaneously published the rules governing mercury, water emissions and solid-waste storage, all of which it had clumsily promised would drive plants to close and thereby reduce greenhouse-gas emissions.

EPA officials apparently grasp that the opinion in West Virginia prohibits the practice that admirers call 'law whispering' or 'teaching old laws new tricks'—particularly on major questions like contriving changes in our energy mix. Gone are the paeans to inventive ways of coercing plants to retire. With a newfound modesty, the administrative record published for these non-greenhouse-gas emissions rules disputes claims of causing 'a significant number of retirements' and attributes any generation shifting to Inflation Reduction Act subsidies.

This ploy to dodge constitutional analysis need not succeed. The previously admitted pretext behind the EPA's 'suite of rules,' individually and collectively, is to achieve the outcome that the court in West Virginia declared the agency has no authority to pursue. The doctrine against pretext debuted in the Department of Commerce [v. New York case] should trigger review under the major-questions doctrine; the disingenuous effort to avoid it presents another basis for review. Courts can take Mr. Regan's word for it or, as in the Trump-era census case, order discovery to determine what factors truly drove the agency's decisions."

Mr. Horner then discusses amicus brief which he co-authored, then concludes:

Bureaucratic workarounds of agencies' limited delegations of power are an affront to the judiciary and to "our democracy.' The Biden backdoor climate gambit is a good place to draw 'the line.

TWTW asks if the EPA really cares about the rule of law and only wishes to play the role of disrupter to the nation's economy.