

The Payne Institute for Public Policy

AT COLORADO SCHOOL OF MINES

MARCH 2026 MONTHLY UPDATE

Letter from the Director

Dear Friends and Colleagues,

This month's Newsletter finds the United States at war with Iran. The media and public have "found" the Strait of Hormuz and the price of gasoline is again at the top of political rhetoric – as it was in 1973, 1979, and 1990. I discussed implications for diesel and jet fuel on MarketPlace last week. The oil markets initially shrugged off the conflict and the closing of the Strait, but the response is now more complex and nuanced. In the very first day of the war, I wrote that:

1. Energy security is a very important part of this developing story, but not its entirety. Many people's lives and livelihoods are at stake.
2. Market will react soon. Key: What happens in the Strait of Hormuz. Not just for oil, but LNG market affected as well. (And European jet fuel.)
3. Attack in Bahrain on the Navy's 5th Fleet directly related. The 5th Fleet is a remaining remnant of US energy security policy since the Carter Doctrine.
4. China's reaction to possibly losing an important oil source. And their response. (Also, issues for India.)
5. UN Security Council "discussing" - does not seem very effective. Other diplomatic efforts needed.
6. Materials for missiles and ammunition as a chokepoint. Mentioned by several military leaders.
7. Good time to reengage with IEA on stockpiles and coordination. After a difficult Ministerial session.
8. Messaging and actions around domestic Strategic Petroleum Reserve. This is where it has the opportunity to play a constructive and possibly calming role.
9. Claiming to understand the full repercussions of these actions now is a fool's errand.

These points still stand over two weeks into the war.

We have also been conducting analysis on munitions and published pieces in Foreign Policy and the Foreign Policy Research Institute on the topic. In the first 96 hours, we estimated that the US-led coalition expended approximately 5,197 munitions across 35 types. This carries a munitions-only replacement bill of \$10–\$16 billion. We also considered the supply chains for the various weapons classes, bringing in our deep expertise on those topics. One such under-considered supply chain is for sulfur and sulfuric acid. We explained the significant hit to that market for the Modern War Institute at West Point. We wrote about how data centers will begin to be targeted in conflicts – as we have already seen. We also have a new Comment out on the role of the Kurdish people in the war.

Of course, our newsletter also considers other topics – like our continuing focus on AI and Energy – there we published what I believe is the most comprehensive academic article to date. And we have a terrific new Comment on the materials needed for nuclear energy. For now, stay safe and we will keep bringing these cutting-edge research insights.

We remain terribly grateful and honored for your ongoing support and collaboration. At any time, you can view the latest news and information on our [website](#). Please feel free to contact us for media queries, speaking engagements, or expert views.

Yours, etc.

Morgan D. Bazilian

Director

Payne Institute for Public Policy

Experts Insights



Article | Over 5,000 Munitions Shot in the First 96 Hours of the Iran War

Macdonald Amoah, Director **Morgan Bazilian**, and Senior Research

Fellow **Jahara Matisek** write about how in the first 96 hours, the US-led coalition expended approximately 5,197 munitions across 35 types. This carries a munitions-only replacement bill of \$10–\$16 billion in four days. This represents a significant industrial burden for replacing some munitions that cannot be replenished in 4 days, 4 weeks, or

even 4 months.

[Read here](#)



Article | The Chokepoint We Missed: Sulfur, Hormuz, and the Threats to Military Readiness

Director **Morgan Bazilian, Macdonald Amoah**, and Senior Research

Fellow **Jahara Matisek** write about how the ongoing disruption in the Strait of Hormuz affects about 20 percent of global petroleum and 20 percent of liquid natural gas transits. It is also the subject of decades of wargaming for just this occurrence. But a lesser-known chemical also is being halted: 41 percent of global sulfur is exported.

[Read here](#)



Article | When the Cloud Becomes a Target: The Future of War Is Your Internet

Macdonald Amoah, Director Morgan Bazilian, and Senior Research

Fellow **Jahara Matisek** write about how to defend against data centers becoming military targets, governments must prioritize geographic dispersion, treat them as critical infrastructure, and move beyond a cybersecurity-only approach.

[Read here](#)



Article | **Critical Minerals Are a Tricky Business. What Could Help.**

Energy Finance Lab Program Director **Brad Handler**, Student Researcher **Andrew Baughman**, Faculty Fellow **Ian Lange**, and Director **Morgan Bazilian** write about how the U.S. government is finally getting serious about safeguarding its supply of critical minerals.

[Read here](#)



Article | **How Chemistry and Rocket Motors Constrain American Warfighting**

Macdonald Amoah, Director **Morgan Bazilian**, and Senior Research Fellow **Jahara Matisek** write about how solid rocket motors—and the chemicals that fuel them—are a major limitation on America’s missile stockpiles, and one that cannot be solved by additional funding alone.

[Read here](#)



Article | **America’s Data Center Boom Must Not Depend on Chinese Batteries**

Jesse R. Edmondson and Director **Morgan Bazilian** write about how the United States must build its own domestic battery supply chain to support the AI data center boom and reduce reliance on Chinese energy storage technologies.

[Read here](#)



Article | **The First 36 Hours of War Consumed Over 3,000 U.S.-Israeli Munitions**

Macdonald Amoah, Director **Morgan Bazilian**, and Senior Research

Fellow **Jahara Matisek** write about how replenishing stockpiles depends on vulnerable critical mineral chains. The expended munitions, and the minerals required to build them, are a defense-industrial problem for the West, and especially the United States.

[Read here](#)



Article | **The Magnet Blind Spot in America's Industrial Strategy**

Director **Morgan Bazilian** and Industry Advisory Board Member **Joseph**

Sopcisak write about how Washington, D.C., has spent the past five years fixating on rare earths—where they're mined, how they're processed, and who controls the magnet supply chain. The real compounding bottleneck isn't just the magnets, it's the motors and drives that use those magnets.

[Read here](#)



Article | **America's Tech Ambitions Outrunning Industrial Realities**

Macdonald Amoah, Director **Morgan Bazilian**, and Fellow **Jahara**

Matisek write about how American reindustrialization is constrained by structural weaknesses in three physical pillars: energy capacity, industrial supply chains, and technical workforce depth.

[Read here](#)



Article | Can Project Vault fortify the US industrial base against mineral chokepoints?

Director Morgan Bazilian and Fellow Lt. Col. **Jahara “FRANKY” Matissek** write about how Beijing is systematically using its near-total control over a range of critical materials to create chokepoints that directly impact the US defense industrial base.

[Read here](#)



Research | Reviewing the Socio-technical Dynamics of AI, Data Centers and Digitalization on Energy and the Environment

Fellow **Steve Griffiths** and Director **Morgan Bazilian**, along with a team of experts, write about how the recent and rapid expansion of artificial intelligence (AI), data centers, and other digitalization technologies has accelerated global electricity consumption, creating a new paradigm in energy and growth.

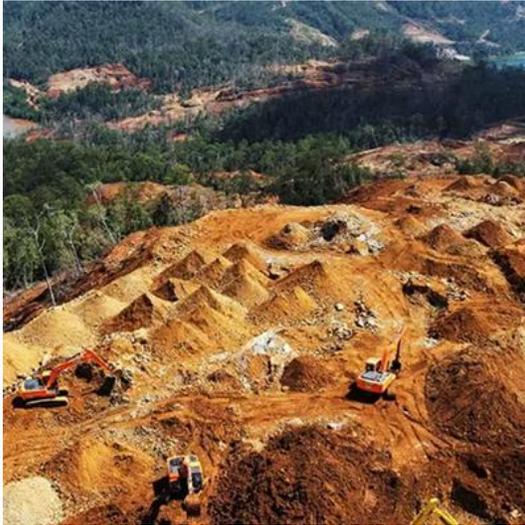
[Read here](#)



Commentary | Variety is Not Enough. Why Can Diversification No Longer Guarantee Energy Security?

Fellow **Andrei Covataru** and Director **Morgan Bazilian** write about how energy has, once again, been discussed less as a commodity and more as a component of industrial and geopolitical power. In this environment, the meaning of energy security extends beyond fuel diversification to encompass broader questions of economic resilience and systemic stability.

[Read here](#)



Commentary | Indonesia Nickel Stakeholder Feedback Sheds Additional Light on Challenges for ASM

Matt Lee, Critical Minerals Program Manager **Clarkson Kamurai**, and Sustainable Finance Lab Director **Brad Handler** write about how ASM presents both opportunities and risks in Indonesia. Looking at ASM companies' limited capability and pointed to how even informal ASM is integrated into larger local actors' planning.

[Read here](#)



Commentary | Nuclear and SMR Non-Fuel Critical Minerals Supply Chain: An Emerging Fourth Value Chain

Kruthika A. Bala and Senior Research Fellow **R.J. Johnston** write about how as Canada expands its nuclear ambitions through small modular reactors (SMRs) and legacy technologies such as CANDU and AP-1000 reactor designs, a new strategic value chain for critical minerals demand is emerging, the nuclear sector.

[Read here](#)

For questions, comments, or media inquiries, please contact **Greg Clough** at (303) 384-2218 or gclough@mines.edu.

Fellows Spotlight



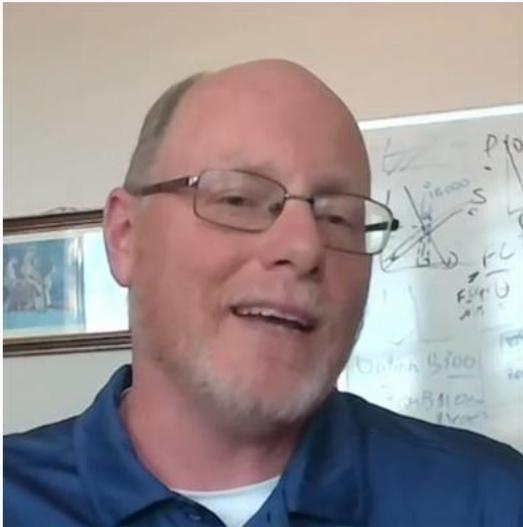
Commentary | Every Time the World Asks “Who Are the Kurds?” There Is a Crisis in the Middle East

Fellow **Peri-Khan Aqrawi-Whitcomb**

writes about how whenever a “Who Are the Kurds?” explainer appears in your feed, and they’re landing right now, you already know two things: there is war somewhere in the Middle East, and someone is hoping the Kurds will help win or contain it. Spread across Turkey, Iran, Iraq, and Syria, they are widely regarded as the largest stateless nation in the world.

[Read here](#)

Faculty Fellows Spotlight



News | Oil Prices Begin to Rise Again Amid Iran Conflict

Faculty Fellow **Ian Lange** discusses the gas prices amid the ongoing Iran conflict on this news video. The U.S. has limited options when it comes to moving oil around the Strait of Hormuz.

[View here](#)



Article | Peter Aaen named Dean of Energy and Materials Programs

Fellow **Peter Aaen** has been named Dean of Energy and Materials Programs at Colorado School of Mines. Aaen joined Mines in 2019 to lead the Electrical Engineering Department. He began the appointment as Energy and Materials dean Dec. 1 after serving as interim dean since May.

[Read here](#)

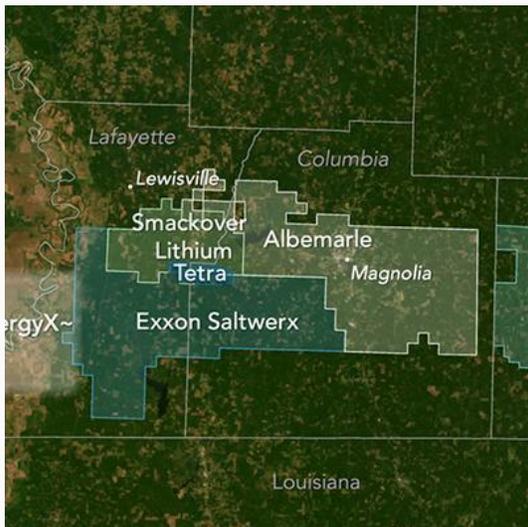


Article | Energizing Tomorrow: Engineering Education, Upskilling, and SPE's Role

Faculty Fellow **Jennifer**

Miskimins writes about how petroleum engineering education is at a crossroads, with university enrollments shrinking and a talent gap looming. Take a look at what the data really show about degree trends, why Gen Z is turning away from engineering, and how SPE—from K-12 outreach to lifelong upskilling—is uniquely positioned to impact the industry's future workforce.

[Read here](#)



Research | Geotechnical, Economic, Social, and Environmental Dimensions of Direct Lithium Extraction (DLE) from Smackover Brines in Arkansas

Aaron Malone, Alannah

Brett, Elisheba Spiller, Faculty Fellows **Linda Battalora** and **Elizabeth Holley, Frances Fitzgerald, Caroline Ruppert, Andres Reyes** and **Julia**

Jann write about how the global scramble for critical minerals and the US push to increase domestic production have generated interest around the potential for direct lithium extraction from oilfield brines (OB-DLE) in Arkansas.

[Read here](#)

Student Research



Energy Is Everything

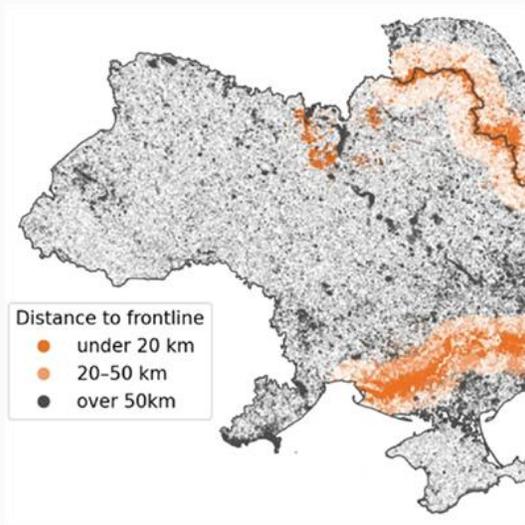
Mines Future Energy Scholars

Podcast | Interview with PCJ: Talking Energy and the Future at Mines

The Payne Institute is a proud partner with the Mines Future Energy Scholar **Mackenzie Marquis** to present her interview with Colorado School of Mines President **Paul C. Johnson (PCJ)** for a conversation about the future of energy, education, and leadership. PCJ discusses how Mines is preparing the next generation of engineers and innovators to address some of the world's most complex energy challenges.

[Listen here](#)

Earth Observation Group

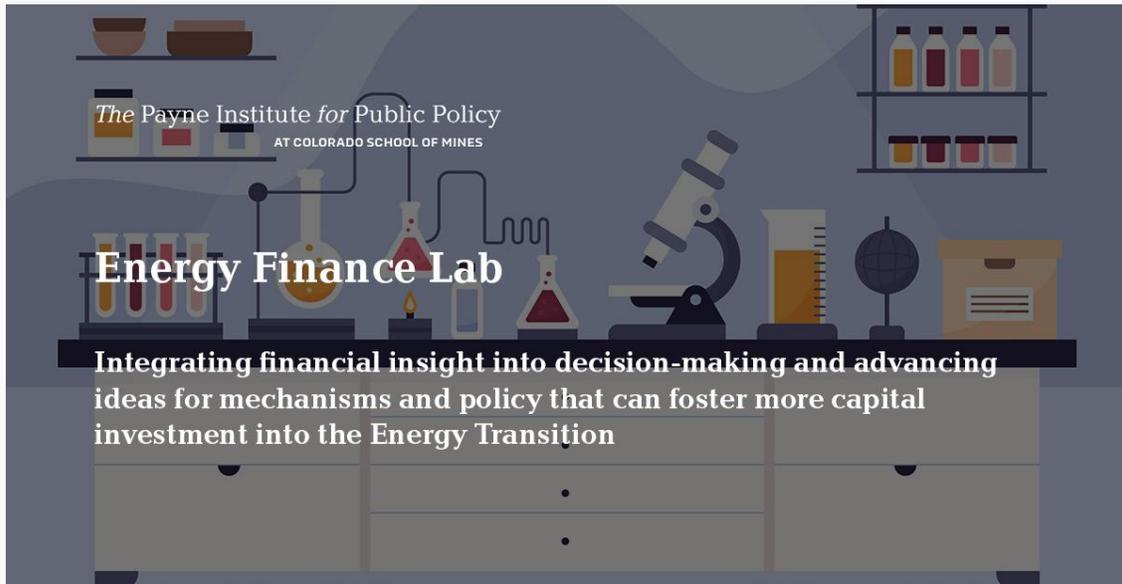


Research | VIIRS Nightfire Super-Resolution Method for Multiyear Cataloging of Natural Gas Flaring Sites: 2012-2025

Merlijn I. Dingemans, Earth Observation Group Researcher Associate **Mikhail Zhizhin**, and **Daniele Cerra** write about how leveraging the Visible Infrared Imaging Radiometer Suite's Nightfire product, we extract signals of conflict across Ukraine, tracking the status of heavy industry, delineating the frontline, and detecting urban combat.

[Read here](#)

Energy Finance Lab



Upcoming Events

Please check the Payne Institute [events](#) page for the latest schedule.

The Payne Institute for Public Policy at the Colorado School of Mines is hosting our [4th Annual Accelerated Methane Reduction Symposium](#) on March 19-20, 2026. This year's theme: More Energy for AI, Domestic Demand and LNG Exports by Investing in Natural Gas Infrastructure.

Please join the Orphan, Idle & Marginal Wells California as they welcome Payne Institute Energy Finance Lab Director **Brad Handler** presenting "Carbon Credits and Well Plugging - From Policy to Project Delivery" on March 25, 2026, during their [2nd Annual Conference](#) in Bakersfield, CA.

Please join SPE International Methane Technical Section for a webinar as they welcome Payne Institute Energy Finance Lab Director **Brad Handler** presenting "[Building Trust in Methane Markets: From Credible Data to Willing Buyers](#)" on March 30, 2026.

The Payne Institute for Public Policy at the Colorado School of Mines is hosting our [3th annual Native American Mining and Energy Sovereignty \(NAMES\) Symposium](#) on May 19-20, 2026, in Albuquerque, New Mexico. This year's convening is designed as a two-day learning journey grounded in the arc of Past → Present → Future, bringing together Tribal leaders, local community members, industry, academia, government, youth, and civil society to learn with and from one another.

Past Events

Please join AAPG as they welcome Payne Institute Energy Finance Lab Director **Brad Handler** presenting "Innovative Financing for Plugging Wells: Where Are We Now?" at the AAPG 4th Annual Orphan, Abandoned, Idle, and Marginal Wells: Opportunities with Legacy Assets on February 25 & 26, 2026.

Please join Clean Energy Economy for the Region (CLEER) as they welcome Payne Institute Geothermal and Low Carbon Technologies Program Manager **Anna Littlefield** presenting "Western Colorado's resource potential and current geotechnical insights and Geothermal power technologies" for their Geothermal Industry & Market Open House on March 9, 2026.

Please join S&P Global as they welcome Payne Institute Energy Finance Lab Program Director **Brad Handler** discussing "carbon markets and carbon capture opportunities" for their annual World Hydrogen and Carbon Americas Conference 2026 from March 10 - March 12, 2026.

Please join BCarbon as they welcome Payne Institute Energy Finance Lab Director **Brad Handler** presenting "BCarbon Approach to Methane Credits" for their Well Plugging Summit 2026 on March 11-12, 2026.

Please join the Payne Institute for Public Policy as we host a CCUS Coffee Session with Fellow **Karen Lechtenberg**, Project Manager – Geologist, Advanced Resources International, presenting "Geologic Carbon Storage: Data Collection Pathways, State by State" on March 10, 2026.

In the News

[Could a Global Economy Dependent on Renewable Energy See Less War? Experts Explain](#)

ABC News - March 17

Contributions from Director **Morgan Bazilian**

[Managing the War Economy](#)

Investor News - March 13

Contributions from the **Payne Institute**

[War in the Middle East Pushes Diesel Prices Up — Other Costs Will Likely Follow](#)

Marketplace - March 6

Contributions from Director **Morgan Bazilian**

[Meteorological Winter Leaves Utah the Way It Came In — Hot and Bothered](#)

KUER - February 9

Contributions from Faculty Fellow **Chris Higgins**

[The Defense Department Is Infatuated With This Drippy Silver Metal](#)

The Wall Street Journal - February 9

Contributions from Faculty Fellow **Adrienne Marshall**

[US Datacenters Face Slew of Problems Amid Grassroots Protests Against AI](#)

The Guardian - February 24

Contributions from Faculty Fellow **Qiuhua Huang**

[Trump's U.S. Mining Push has a Big Problem](#)

Washington Post - February 20

Contributions from Faculty Fellows **Elizabeth Holley**

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