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Global Warming Energy Restrictions Threaten U.S. National Security

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Summary

- Economic strength is vital to supporting a strong military.
- Carbon dioxide restrictions raise energy prices, which weakens the economy.
- America can leverage its dominant conventional energy sources for geopolitical advantages.
- Nations such as China and Russia dominate the market for rare earth minerals necessary for renewable power generation.
- Global warming is a threat reducer. Asserted "threat multipliers" like crop output, droughts, and extreme weather events are becoming more benign as Earth warms.

Executive Summary

Global warming activists claim climate change poses a threat to America's military and national security. Their primary assertion is that alleged negative impacts from global warming—such as crop failures, droughts, and extreme weather events—create political, social, and military upheaval. To enhance our military security, these activists claim America should impose carbon dioxide restrictions on the U.S. economy and the American people.

The United States sustains the most powerful military in the world, because the dominant U.S. economy enables policymakers to spend more on military preparedness than any other nation. America's continuing ability to field a powerful military depends on the United States retaining its status as the world's dominant economic power. Proposals to restrict U.S. carbon dioxide emissions and impose expensive, jobs-killing energy sources on the economy present a clear and present danger to military strength. This is especially true because the Paris Climate Agreement and other international climate agreements target Western-style democracies and impose no similar carbon dioxide restrictions on many potentially hostile nations.

America has more combined coal, oil, and natural gas resources than any other nation in the world.[1] It leads the world in oil reserves and

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* This *Policy Brief* has been developed in collaboration with Admiral Thomas B. Hayward, U.S. Navy (retired), former chief of Naval Operations and commander-in-chief of the U.S. Pacific Fleet.

coal reserves, and it is fourth in the world in natural gas reserves.[2,3,4] Only one other nation has even *half* as much of these resources as the United States.[5]

Because of its significant role in the globe's most important energy markets, America has unique economic advantages, international leverage, and military power. By contrast, China is the leading source of the rare earth minerals that are necessary to produce wind and solar power equipment.[6] Making a political decision to transform the U.S. and global economies from American-dominant energy sources to Chinese-dominant energy sources would pose new and severe threats to American international influence and U.S. national security.

The negative economic and geopolitical impacts of carbon dioxide emissions restrictions and an attempted transformation to a wind- and solar-powered economy are amplified by the lack of any substantial national security threats related to Earth's ongoing modest warming. It is speculative and dubious to assert that crop failures, droughts, or other negative climate events occurring overseas would reduce U.S. national security. However, even if that were the case, the frequency and severity of such unfortunate events is diminishing as Earth modestly warms, not increasing. Rather than being a threat multiplier, the impacts of ongoing modest warming serve as a threat reducer.

The U.S. military can and should prepare for a full range of *plausible* threats to national security, but preparing for all conceivable threats does not mean all such events are likely to occur. Restricting America's energy freedom and stifling the economy impose a "cure" that is more damaging than the asserted national security threat.

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A review of all risk factors reveals that imposing carbon dioxide restrictions on the U.S. economy would diminish, rather than enhance, American military preparedness. Proposed carbon dioxide restrictions would reduce U.S. economic strength, America's international energy influence, and U.S. military strength.

To enhance national security, policymakers should (1) encourage greater production of U.S. domestic conventional energy resources, (2) encourage optimal use of domestic conventional energy resources in the American economy, (3) support more U.S. conventional energy exports, and (4) resist calls to impose carbon dioxide restrictions on the economy.

Economic Power Enables Military Power

The primary factor in a nation's ability to muster and project military strength is a strong economy. A large land area is helpful, but if this were the primary factor, Canada and Russia would have the most powerful militaries in the world. A large population

helps, but if this were the primary factor, China and India would have the most powerful militaries. A thriving economy is necessary for sustaining technological research and development and the creation of powerful and effective military facilities, equipment, and personnel.

Policies that reduce a nation's ability to robustly fund military research and deployment diminish that nation's capability to wield a powerful military. For example, the economic weight of attempting to match U.S. military strength was a key component in the collapse of the Soviet Union.[7]

POLICIES THAT DRIVE ENERGY PRICES HIGHER STIFLE THE ECONOMY AND MAKE IT MORE DIFFICULT TO MAINTAIN MILITARY BUDGETS NECESSARY FOR MILITARY READINESS.

For the past 75 years, the United States has been the world's most important economic and military power, with economic and military dominance going hand-in-hand. The U.S. economy emerged from World War II producing as much gross national product as the rest of the world combined, and the scope of that economic dominance lasted for decades.[8] While America's economic dominance has diminished over time, the United States continues to lead the world in gross national product. On the foundation of such economic strength, America can dedicate prodigious economic resources to military spending without significant reductions in living standards. As a result, the United States spends more than twice as much on its military than any other nation.[9] This is the basis of its supreme military might.

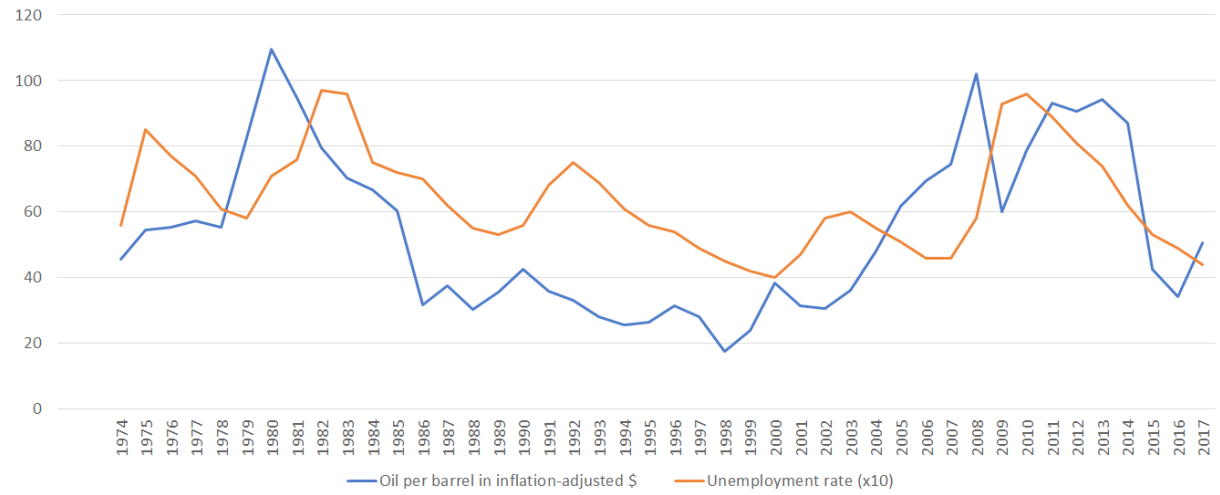
Energy Costs Determine Economic Performance

Energy is the lifeblood of modern economies. Energy factors in the production, transportation, and price of every good and service within the economy. When energy prices are low, the costs of goods and services remain low and people can purchase additional goods and services. When energy prices are high, the costs of goods and services increase, prohibiting consumers from purchasing the goods and services they desire. Affordable energy is one of the most important factors when attempting to increase living standards and build or expand a vibrant, modern economy.

Figure 1 (on page 4) shows that energy prices closely correlate with changes in the unemployment rate, and accordingly the U.S. economy.[10] Each time oil prices rise, unemployment increases soon thereafter. When oil prices fall, the unemployment rate drops. While other factors also impact the national economy, the data show a close correlation between energy prices and subsequent unemployment rates (which reflect the state of the national economy).

Policies that keep energy prices affordable strengthen the U.S. economy and allow for continued robust military spending. Policies that drive energy prices higher stifle the economy and make it more difficult to maintain military budgets necessary for military readiness.

Figure 1. Oil Prices and Unemployment



Sources: U.S. Energy Information Administration and U.S. Bureau of Labor Statistics

Climate Activist Policies Increase Energy Prices

Global warming activists' prescribed policy options would impose a substantial strain on energy prices and economic vitality. By hamstringing the U.S. economy for generations to come—while simultaneously leaving potential American adversaries free to utilize inexpensive, conventional fuel sources—global warming activists would severely curtail the United States' ability to continue fielding a dominant military.

Climate activists seek a dramatic reduction in U.S. carbon dioxide emissions, equaling or exceeding reductions called for in the Paris Climate Agreement. This would require abandoning coal, oil, and natural gas as America's primary energy sources. Most climate activist groups also oppose nuclear power and hydropower, even though they are emissions-free energy sources. In a climate activist's ideal world, wind and solar power would provide nearly all electricity generation, while vehicles would be powered by batteries charged by wind and solar power.

Coal, oil, and natural gas are vital parts of the American and global energy markets, because they are the most affordable, abundant energy options available. U.S. energy companies have no sway in the decisions made by China, Europe, India, Japan, Russia, or the rest of the world regarding energy, and those regions continue to overwhelmingly rely on coal, natural gas, and oil as their primary energy sources. In nearly every nation in the world, these sources provide the majority of power because they are more affordable, abundant, and reliable than wind and solar power. Rapidly developing nations, including China, India, and Indonesia, are responsible for the vast majority of the recent increase in global carbon dioxide emissions.[11] These nations, along with poorer developing nations, will continue to choose

the affordable coal power that offers a better path out of poverty compared to expensive and unreliable wind and solar power.

Economic data reveal the comparative benefits of conventional energy to wind and solar power. The Institute for Energy Research (IER) study titled "The Levelized Cost of Electricity from Existing Generation Sources" found replacing coal power with wind power nearly triples electricity costs.[12] The study also determined replacing coal power with solar power raises electricity prices even more.

These findings confirm a previous study by the Brookings Institution, titled "Why the Best Path to a Low-Carbon Future Is Not Wind or Solar Power," which found replacing coal power with wind power doubles electricity costs and replacing coal power with solar power quadruples electricity costs.[13]

Studies of electricity costs in the 50 states confirm the beneficial economic impact of coal power. Coal is the leading source of electricity production in 18 of the 50 states. In only three of those 18 states is the price of electricity higher than the national average, and all three of those states—Kansas, Michigan, and Wisconsin—are severely hampered by wind power. Kansas has the nation's second highest percentage of wind-powered electricity generation. Michigan and Wisconsin are both in the top five for having the fastest increase of wind power, by percentage.[14] Even the cost-effectiveness of inexpensive coal power can mitigate only so much expensive wind power.

These figures are made more remarkable by the fact that the high costs of wind and solar power exist even though wind and solar companies have cherry-picked the best places to generate wind and solar power. Ramping up wind and solar generation from just a few percent to 50 percent, 80 percent, or even 100 percent of U.S. generation would require relying on wind power generated in places other than the windy high plains or the sunny Mojave Desert.

Climate activists would strike a similarly detrimental blow against U.S. economic and geopolitical strength by restricting or eliminating American production of conventional energy resources.

Relying on wind and solar power produced in less than ideal places would drive prices up even higher than they are today, striking a devastating blow to the economy and America's ability to continue wielding a dominant military.

U.S. Fossil Fuel Exports Provide Economic and Strategic Geopolitical Strength

Climate activists would strike a similarly detrimental blow against U.S. economic and geopolitical strength by restricting or eliminating American production of conventional energy resources. Regardless of how the United States decides to power its economy, most nations will continue to power their economies using fossil fuels. Although the United States has more energy resources than any other nation, only recently has it become a globally signif-

icant exporter of oil and natural gas—two of the three major energy sources. Accordingly, Europe is beholden to Russia as its main supplier of energy imports, which could potentially undermine Europe's unity with the United States in times of diplomatic or military clashes with Russia.[15]

By producing and exporting more coal, oil, and natural gas to Europe, America would grow its economy and capacity to support its military. There would be an additional benefit, as well: stripping Russia and the Russian economy of its largest energy clients.[16] This would enhance our economic and geopolitical advantages over Russia and other energy exporters who often challenge American geopolitical interests.

China dominates the global rare earth minerals market, producing five times more rare earth minerals than the second-leading producer.

Other nations that are vital to American geopolitical interests are also dependent on conventional energy imports from countries that are antagonistic or hostile to the United States. For example, India, Japan, South Korea, and Turkey are all among the world's top 10 coal importers.[17] Russia's exports give it leverage over these nations. Russia already exports more coal than the United States, and Russian President Vladimir Putin announced this year his intention to further increase Russia's coal exports.[18] Despite this threat posed by Russia, global warming activists and the environmental left continue to block U.S. coal exports.[19]

Ending or impairing the ability of U.S. energy companies to produce and export oil, coal, and natural gas would harm the U.S. economy, reduce American influence on energy-importing nations, and bolster the economies of potential adversaries and the influence of potential adversaries on energy-importing nations.

A Renewables-Driven Economy Would Make America Vulnerable to China

Rare earth minerals are vital to wind and solar power equipment.[20] China dominates the global rare earth minerals market, producing five times more rare earth minerals than the second-leading producer.[21] Russia is the third-leading rare earth producer. America relies on foreign nations, especially China, for its rare earth minerals.

A transformation of the global economy into one dependent on rare earth minerals would freeze out American influence in energy economics and politics. America and other nations would be dependent on the benevolence of China and Russia for their ability to employ new or replacement energy infrastructure.

Global Warming Is a Threat Reducer

We could embark on a full discussion and provide documentation showing why global warming does not present an impending crisis. We could also show that the claim a vast majority of scientists believe humans are creating a climate crisis is a myth. But for the purpose

of keeping this paper on point regarding military and national security issues, we instead direct readers to *Climate Change Reconsidered II: Fossil Fuels*,[22] which contains the latest compilation of climate science authored by the Nongovernmental International Panel on Climate Change (NIPCC). We also direct readers to *Why Scientists Disagree About Global Warming: The NIPCC Report on Scientific Consensus*,[23] also published by NIPCC.

EVEN IF CROP FAILURES AND OTHER EXTREME WEATHER AND CLIMATE EVENTS WERE TO BECOME THREAT MULTIPLIERS, THE SCIENTIFIC RECORD IS CLEAR THESE EVENTS ARE BECOMING *LESS* FREQUENT AND SEVERE AS THE PLANET WARMS.

The primary argument made by global warming alarmists who say climate change is a national security threat is that the negative impacts for global warming are a "threat multiplier." They claim global warming will exacerbate conditions such as droughts, crop failures, extreme weather events, and sea-level rise that can spark political or military conflict or cause refugee crises.

The administration of President Barack Obama issued an executive statement in 2015 summarizing those claims, asserting, "Climate change poses immediate risks to our national security, contributing to increased natural disasters and resulting in humanitarian crises, and potentially increasing refugee flows and exacerbating conflicts over basic resources like food and water."[24] But for global warming to become a national security risk, the amplification of threat multipliers must pose significantly more danger to national security than the harm inflicted on the American economy and geopolitical influence by restricting the production, use, and export of fossil fuels.

The U.N. Intergovernmental Panel on Climate Change (IPCC) examined the threat multiplier topic in its most recent full report. IPCC reviewed the literature on "the relationship between short-term warming and armed conflict" and concluded, "Some of these find a weak relationship, some find no relationship, and collectively the research does not conclude that there is a strong positive relationship between warming and armed conflict."[25]

Even if crop failures and other extreme weather and climate events were to become threat multipliers, the scientific record is clear these events are becoming *less* frequent and severe as the planet warms. The reduced frequency and intensity of extreme weather events, documented below, is contrary to what is often reported by the mainstream media.

Greater Crop Production, Fewer Crop Failures

Global warming activists often attempt to blame the Syrian Civil War on crop failures caused by drought and climate change. (The Syrian Civil War, which involved a revolt against the Syrian dictatorship, started during the Arab Spring uprisings in 2011.) Setting aside the curious assertion that people demanding a more democratic society, rather than an oppressive dictatorship, is a negative political development, the scientific facts strongly contradict the alarmist narrative.

The 2011 Arab Spring uprisings in Syria occurred in a year in which Syria produced the eighth highest crop yields per acre in its history. This undercuts the assertion that a drought and resulting crop failure caused the Syrian Civil War. Indeed, five of the six most productive Syrian crop yields per acre have occurred during the past 15 years.[26]

The benefits of a warmer climate on food production are even more apparent globally. The World Bank reports global cereal yields per acre have increased by 28 percent since 2000 and 71 percent since 1980.[27]

As Earth continues its modest warming, it is likely crop yields will continue to set new records.

The benefits of a warmer climate are especially important in the nations with the most people to feed. The five countries with the largest populations are China, India, the United States, Indonesia, and Brazil.

China set a national record for cereal yields (corn, rice, and wheat) per acre in 2016, the most recent year for which there is data. The second highest yields were achieved in 2015. The third highest yields were achieved in 2013. The fourth highest yields were achieved in 2014. Chinese crop production is currently 27 percent higher than it was in 2000, and it has more than doubled its yield per acre since 1980.[28]

India also set a national record for cereal yields per acre in 2016. Like China, each of the six highest yields per acre occurred during the past six years reported. Indian crop production is 30 percent higher than in the year 2000, and more than double the yields per acre in 1980.[29]

The United States set a national record for cereal yields per acre in 2016. Each of the four highest yields per acre recorded in American history occurred during the past four years reported. American crop production is 39 percent higher than in the year 2000 and more than double the yields per acre in 1980.[30]

Indonesia set a national record for cereal yields per acre in 2016. Each of the five highest yields per acre occurred during the past five years reported. Indonesian crop production is 34 percent higher than in the year 2000 and nearly double the yields per acre in 1980.[31]

Brazil set a national record for cereal yields per acre in 2015. Each of the five highest yields per acre occurred during the past five years. Brazilian crop production in 2015 was 92 percent higher than in the year 2000 and more than triple the yields per acre in 1980.[32]

Globally, the U.N. Food and Agriculture Organization reports the 2017–18 season produced record global cereal yields per acre. The record that had been set in 2013–14 was broken in 2014–15, which was then broken in 2015–16, which was then broken in 2016–17, and then broken again in 2017–18.[33]

As Earth continues its modest warming, it is likely crop yields will continue to set new records. If crop failures are a threat multiplier, then crop production is serving as a threat reducer in a warming world.

Substantial Greening of Earth

The beneficial crop yield trends are supported by trends regarding global foliage and global soil moisture. NASA satellites have measured a substantial greening of Earth during recent decades, illustrating ongoing improvements in crop yields are not merely the result of better fertilizers or agricultural technologies. Vegetation is becoming denser and is extending its reach into previous desert and semi-desert landscapes throughout the world.[34] Scientists have identified higher atmospheric carbon dioxide and better climate conditions as the primary contributors.[35]

NASA SATELLITES HAVE MEASURED A SUBSTANTIAL GREENING OF EARTH DURING RECENT DECADES, ILLUSTRATING ONGOING IMPROVEMENTS IN CROP YIELDS ARE NOT MERELY THE RESULT OF BETTER FERTILIZERS OR AGRICULTURAL TECHNOLOGIES.

Improving Global Soil Moisture, No Increase in Drought

Global soil moisture has been much higher in recent decades than it was a century ago. Higher global temperatures are increasing rates of evaporation from the oceans, resulting in additonal rainfall over land surfaces. A comprehensive assessment of global soil moisture throughout the twentieth century found, "In contrast to predictions of summer desiccation with increasing temperatures, for the stations with the longest records summer soil moisture in the top 1 [meter] has increased while temperatures have risen. The increasing trend in precipitation more than compensated for the enhanced evaporation."[36]

More recent data and studies have confirmed this century's trend of increases in soil moisture and no increase in the number of droughts. For example, a study published in the peer-reviewed *Nature* in 2012 found, "there has been little change in drought over the past 60 years."[37]

A 2013 study published in the peer-reviewed *Theoretical and Applied Climatology* reported that globally there has been "no significant trend in the areas under drought over the land in the past three decades."[38]

A 2014 study published in the peer-reviewed *Scientific Data* examined three decades of precipitation and soil moisture and found drought extent declined between 1982 and 2012 in all five categories used to rank drought conditions.[39]

A 2016 study published in the peer-reviewed *International Journal of Climatology* found, "for most of the [coterminous United States], drought frequency appears to have decreased during the 1901 to 2014 period."[40]

In April 2017, the smallest percentage of the United States on record experienced drought conditions.[41]

A 2018 study published in the peer-reviewed *Weather and Climate Extremes* found no "clear trend on the number and/or intensity of droughts at global or continental level." Moreover, an "analysis of the extreme hot spots of

agricultural drought does not identify an increase on the number of events and/or in their intensity."[42]

No Worsening of Hurricanes

Hurricane and tropical storm data reveal no statistically significant worsening trends. During the past 50 years there has been a slight decline in the number of tropical storms and hurricanes. There has been a very modest increase in the frequency of major hurricanes since 1980, though the trend has been declining during the past 25 years.[43]

In 2017, the United States ended an 11-year string without a major (Category 3 or higher) hurricane, easily shattering the previous record.[44] Further, there is no evidence that hurricane activity would pose a military or national security threat to the United States, even if activity were to increase.

THERE HAS BEEN A VERY MODEST INCREASE IN THE FREQUENCY OF MAJOR HURRICANES SINCE 1980, THOUGH THE TREND HAS BEEN DECLINING DURING THE PAST 25 YEARS.

Reduction in Tornado Strength, Frequency

Most of Earth's recorded tornadoes occur in the United States, and in 2017–18, America set a record for the longest period in history without a single tornado death, indicating global warming is not causing an increase in the number of deadly tornadoes.

Further, all four of the longest periods without a tornado death have occurred since 2012, and the United States went from 2013 through 2018 without a single F5 tornado strike, the second longest period in history.[45,46]

No Acceleration in Pace of Sea-Level Rise

Environmental activists claim global warming is causing an acceleration in sea-level rise. They assert such acceleration is threatening to inundate U.S. military (and particularly naval) bases. They also claim the acceleration in sea-level rise is creating climate refugees. The scientific evidence, however, contradicts the notion that global warming is causing an acceleration in sea-level rise.

Satellite instrument measurements show global sea-level rise is occurring at a pace of just 1.2 inches per decade.[47] The data, which stretch back 25 years, show no significant recent increase in the pace of sea-level rise. The recent and present pace of sea-level rise indicates there will be just 3.6 inches of global sea-level rise by 2050, which is in keeping with the pace of sea-level rise throughout much of the twentieth century.

A November 2018 study published by climate scientist Judith Curry, former chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology, examined sea level during the past several thousand years, and during the past century in particular. The study confirms there has been no recent acceleration in sea-level rise. The study found

sea levels were higher 3,000 years to 6,000 years ago, and sea levels have also been rising since the mid-1800s. Curry's study shows the pace of sea-level rise from 1920 to 1950—when carbon dioxide emissions were relatively minimal—is similar to the pace of sea-level rise today. "The emergence of fossil fuel emissions prior to 1950 did not contribute significantly to 19th and early 20th century sea level rise," wrote Curry.[48] As such, the pace of sea-level rise in recent decades is indistinguishable from the pace of natural internal variability.

The study acknowledges that some coastal regions are experiencing more sea-level rise than others, but "in many of the most vulnerable coastal locations, the dominant causes of local sea level rise problems are natural oceanic and geologic processes and land use practices." Analyses by the U.S. Geological Survey shows this is especially the case regarding naval bases in the Hampton Roads and Norfolk, Virginia region. According to the U.S. Geological Survey, land subsidence, rather than rising global sea levels, is responsible for the majority of local sea-level rise in the Chesapeake Bay region, including Hampton Roads and Norfolk.[49]

Scientific evidence also contradicts recent high-profile claims about rapid acceleration in sea-level rise at the U.S. Naval Academy in Annapolis, Maryland. U.S. Naval Academy professor Gina Henderson claimed in public statements that the sea level at the Naval Academy's Annapolis campus is expected to rise between seven inches and 43 inches by 2050.[50]

Sea-level measurements at Annapolis, however, show the city is experiencing sea-level rise at approximately the global average. Scientists have been taking tidal gauge measurements at Annapolis since the 1920s. According to the National Oceanic and Atmospheric Administration (NOAA), sea-level rise at Annapolis is occurring at a pace of merely 1.4 inches per decade, with no recent acceleration.[51] At that rate, there would be only 4.2 inches of sea-level rise by 2050, far less than the seven to 43 inches Henderson predicted.

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Even if Henderson's predicted rise in sea level were to occur, this would not create a crisis at the Annapolis naval facilities or pose a threat to national security. Taking Henderson's prediction at face value, the Naval Academy plans to raise its sea wall approximately three feet.[52] Problem solved.

Prescriptive Actions

To enhance American national security, policymakers should encourage greater production of U.S. domestic conventional energy resources, including coal, oil, and natural gas. Greater domestic production would ensure ample supply of affordable energy regardless of overseas geopolitical developments. Affordable energy, is a key to sustaining an economy strong enough to support budgets necessary for military readiness.

Policymakers should also encourage optimal use of conventional energy resources in the

U.S. economy. Renewable power mandates, excessive regulations, and state utilities commissioners who pursue aggressive anti-fossil-fuel agendas threaten national security by draining the American economy of its lifeblood of affordable, abundant energy.

Policymakers should support more conventional energy exports. American coal, oil, and natural gas exports boost the American economy by bringing foreign money into the country. Moreover, more U.S. energy exports will enhance America's geopolitical position by guaranteeing foreign nations are less dependent on major exporters like Russia, Venezuela, and the Middle East.

Moreover, more U.S. energy exports will enhance America's geopolitical position by guaranteeing foreign nations are less dependent on major exporters like Russia, Venezuela, and the Middle East.

Finally, policymakers should resist calls to impose carbon dioxide restrictions. Carbon dioxide restrictions—whether in the form of cap-and-trade policies, carbon dioxide taxes, or restrictive international treaties—replace affordable energy with expensive, unreliable energy sources.

The strong negative impact of high energy prices on the U.S. economy would weaken national security by making it more difficult to sustain an adequate military budget for the American military.

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About the Author

James Taylor is a senior fellow for environment and energy policy at The Heartland Institute.

Taylor is the former managing editor (2001-2014) of *Environment & Climate News*, a national, monthly publication devoted to sound science and free-market environmentalism.

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Founded in 1984, The Heartland Institute is an independent national nonprofit research organization. It is a tax-exempt charity under Section 501(c)(3).

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- We communicate with more national and state elected officials, more often, than any other think tank in the United States. In 2018, we recorded nearly a million contacts with elected officials.

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