# Middle East War Good

### Link—Oil prices

#### Oil price cycle means war increases oil prices

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Oil has shaped international conflict for decades. According to one estimate, twenty-five to fifty percent of interstate wars between 1973 and 2012 had oil-related linkages. 1 But the cyclical nature of oil’s contribution to global conflict is not well understood. Not only are oil prices cyclical, but the geopolitics of oil are linked inexorably to the same boom and bust price cycle.

Military adventurism, proxy wars and regional pathologies in the Middle East expand and contract with the ebb and flow of massive petrodollar accumulations related to the oil price cycle.

The massive inflow of petrodollar revenues when oil prices are high creates disposable incomes that can be easily dispensed on regional arms races, especially since oil consuming countries like the United States are incentivized to increase arms sales as a means of solving oil import related trade deficits. Besides transferring wealth from industrialized countries to oil producers in the Middle East and North African (MENA) region and Russia (and stimulating renewed drilling for oil and gas in North America), high global oil and natural gas prices also slow global economic growth and encourage energy conservation. This causes petroleum demand to slow globally, lowering oil prices. Social and political problems in the region reemerge as oil prices recede. Regional governments have fewer resources to spend on restive populations that have become accustomed to generous handouts enabled by high oil prices. Job creation and visible social programs slow, dissatisfaction rises, and the consequences of economic downturns incite support for militants. Ensuing instability forces governments to use newly purchased arms, which ironically begins the cycle yet again, as new conflicts disrupt oil supplies.

In this manner, the world experiences perpetuating patterns of military conflict, followed by oil supply crises, and accompanying global financial instability. In effect, the Middle East resource curse has become globalized. The challenges this is presenting on humanitarian, security and economic fronts have become increasingly dangerous. The arms race that has accompanied the rise of oil prices over the 2000s has been no exception and is now all the more complicated due to the violent participation of sub-national radicalized groups that are less susceptible to diplomatic pressures or initiatives. In this emerging geopolitical context, the rise of violent subnational groups like ISIS and Al-Qaeda are increasingly putting oil infrastructure at risk, laying the groundwork for a future oil crisis that may prove harder to solve than in the past.

As borders and ruling institutions have become contested, so has control of the region’s major oil and gas facilities. Initially an outgrowth of disunity inside Iraq, the conflict over oil and gas facilities is now accelerating across ungoverned territories, with important long-term consequences for global energy markets. Mideast oil and gas production capacity, along with surface facilities, are increasingly being damaged in ways that will make them hard to repair. Export disruptions, which were once sporadic, are becoming a more permanent feature of the civil war landscape. The level of destroyed capacity is currently estimated at about 2 million b/d and rising.2 The longer Mideast conflicts fester, the more that infrastructure could become at risk. There is an additional element to this oil and war story that links structurally with the oil boom and bust cycle.

As oil prices recede, along with a decreased demand for oil and accelerating regional conflict, wealthy oil producers such as Saudi Arabia, the United Arab Emirates, and Kuwait, are often tempted to use large oil production capacity as a strategic asset. They flood the market with increased supplies in order to lower prices, thereby hurting geopolitical rivals. This price war strategy, which was notably present during the prolonged Soviet war in Afghanistan and the eight year Iran-Iraq War, temporarily ameliorates the short run effects of war on surface export facilities through excessive production rates. In addition, it lays the seeds for the future uptick in the oil market, by discouraging investment in future oil productive capacity outside the Middle East when prices are extremely low. In the case of the 2000s, the destruction caused by ISIS on the oil sector in many locations around the Middle East, combined with expected losses in investment in other parts of the world (like Canada’s oil sands and the Arctic due to current low oil prices), may be creating the conditions for a future oil supply crunch. This has major implications on U.S. policy.

This article asserts that the United State would be, in light of these circumstances in the Middle East, unwise to dismantle its Strategic Petroleum Reserve (SPR) as has been suggested on Capitol Hill. It would be similarly unwise for the United States to lose focus on the importance of conservation efforts in the transportation sector which has both national security and climate benefits. The United States would benefit strategically from a reevaluation of its ban on oil exports. Finally, the United States should place a greater emphasis on conflict resolution in troubled states. By resolving internal conflicts over the distribution of oil revenues, the United States can better pave the way for long-term solutions whereby those same revenues can be integrated into national budgets in ways that brings economic prosperity to populations instead of rising military expenditure.

WAR AND THE OIL CYCLE

Over the past four decades, oil prices have been governed by a combination of the real business cycle and the boom and bust investment cycles of oil exploration and production (E&P). As economies expand during upswings in the business cycle, oil demand rises in parallel, often fueling fears that shortages will occur.3 Oil prices then rise, generally in combination with irrational exuberance and market bubbles.4 High oil prices eventually stimulates more investment in oil exploration and drilling, encouraging technological innovation under the pressures of a renewed belief that high prices mean oil is permanently running out. But gravity eventually takes its course. Exceptionally high prices that follow the boom cycle then hinder continued economic acceleration. Commodity and asset market bubbles burst and recession ensues, limiting new demand for oil and thereby bringing oil prices to a collapse. This lasts until cheap energy and government financial market interventions yet again restore economic equilibrium and growth. Producers, concerned about losses in their market shares, initiate price wars, which leave markets even more oversupplied, until low prices stimulate economic growth and oil demand once more.

The oil cycle has brought with it a similarly volatile economic cycle for the petrostates of the Middle East, whose governments have rapidly fluctuated between gigantic cash surpluses of so-called “petrodollars” and socially devastating budget deficits. Dubbed the resource curse, the massive influx of oil revenues during the commodities price up cycle discourages productive, non-commodities-linked investment, which is needed for long term-growth. The influx of petrodollars also fosters corruption and patronage, drives real estate and stock market bubbles, as well as provides irresistible incentives for wasteful government spending on white elephant projects and military expansion.

The geopolitical component of this oil megacycle can be particularly insidious. As oil capitals like Moscow, Riyadh, Abu Dhabi, Doha and Tehran reap massive profits with a sudden influx of petrodollars not easily recycled into domestic economies, significant financial reserves become available for arms purchases and military adventurism. Such initiatives are designed to protect the ruling class from both external threats (real and imagined) and internal challenges through robust internal security spending. Today, military employment in the Middle East is particularly high at three percent while military expenditures as a percentage of gross domestic product (GDP) is also strikingly high.5 For instance, it is above ten percent in Saudi Arabia.6 The regional arms race that accompanies high oil prices boosts not only arsenals of key countries in the Middle East but also their subnational proxies and even terrorist organizations that arise to challenge the status quo. Ironically, the flow of weapons driven by the oil price boom then increases the geopolitical risk to oil production, once again laying the groundwork for a future rise in oil prices as fears grow that military conflict will once again disrupt supplies.

In this way, as noted by historian Toby Craig Jones: “oil and war have become increasingly interconnected in the Middle East,” with the United States not only “mired in the middle” but “its approach to oil has abetted the outcome.”7 In fact, the United States and the West unwittingly participate in propelling the geopolitical nature of the oil cycle by recycling petrodollars via the sales of military equipment. In the mid-2000s, to reduce the pressure of the trade deficit on the U.S. dollar, the United States offered the Gulf Cooperation Council (GCC) countries a $20 billion arms deal that now equips today’s conflicts.8

Recently, the level of geopolitical conflict underlying the Middle East’s oil mega cycle is particularly dangerous, coupled with the Arab Spring uprisings and the dashed expectations of a new generation of youth. Not only have borders and identity politics in the region blurred in a manner that will be hard to reconstitute, but key institutions and infrastructure are being rapidly destroyed. For oil resource development, a business that requires huge capital inflows, long lead times and complex engineering, the rising instability and collapse of institutions in certain Middle East countries bodes ill for future regional economic progress. Regardless of the promise of new oil and gas supplies from shale formations in North America and beyond, a third of global oil production is still sourced from the Middle East and North Africa (MENA) region. While this might be able to be reduced over time, for the next few years, the fate of Middle East oil will still have huge impacts on the global economy.

REGIONAL BATTLES AND OIL FACILITIES

The oil price spikes of the 2000s are presenting complex energy and conflict challenges, problems that harken back to previous periods. Just as violence in the region devastated key oil facilities in the 1980s and early 1990s, today’s battles continue to destabilize important energy producing centers. Current regional armed conflicts over oil fields raise a serious new risk that oil facilities are becoming strategic assets and spoils of war. The level of damage will be tied to the effectiveness of the United States and its allies to contain the spread of ISIS to new locations and the possibility of peaceful resolution of regional proxy wars.

Russia’s buildup of troops in Syria adds another complication to the limited options facing the United States as it tries to build coalitions for a political transition in Syria. Despite the current energy surplus, Washington needs to avoid complacency about the global energy balance or it will find itself with few options in the continued destruction of energy infrastructure in the Middle East.

Unlike past regional wars, which were characterized by state-to-state armed conflict, today’s friction points largely involve sub-national groups such as ISIS, Al Qaeda and other local militias. These sub-national groups are the ones this time around focused on gaining control of oil production and refining installations in contested areas. Their political impermanence has created unique problems, not the least of which is the inclination to use force to deny access to the facilities by regional rivals or the devolved state government. In the last year, 1.9 million b/d of oil productive capacity has been lost in the Middle East due largely to conflict.9 And, there is a lot more at stake, given that the MENA region produces 32.5 million b/d, about a third of total world production.10 Saudi Arabia’s eastern province, which has been targeted by ISIS, is the home to over 90 percent of the kingdom’s oil production and the vast majority of world’s spare oil production capacity.11

The current pace of arms buying in the region gives little reason for optimism. Even as Saudi Arabia’s oil revenues were declining precipitously towards the end of 2014, Saudi Arabia was increasing its military spending to more than ten percent of its GDP.12 The United Arab Emirates military spending was similarly high at three to four percent of its GDP, with Qatar at two to three percent.13 U.S. policy fed into this risky trend with President Obama promising new sales in arms to the GCC, in the aftermath of the historic P5+1 nuclear deal with Iran, including a $5 billion deal with Saudi Arabia for 600 Patriot missiles.14 The United States is engaged in a diplomatic effort to reduce hostilities among key players and unify the effort to stop ISIS. Russia for its part seems to have rejected a diplomatic solution for the time being, committing more troops and material to the Assad regime in Syria.15

Our historical analysis of the impact of regional wars on long term oil market trends would suggest that the continuation of current conflicts could have major consequences for the upcoming global oil supply. In a study with coauthor Mahmoud El-Gamal, who utilizes Discrete Wavelet Transform (DWT) analysis to measure the effects of price and investment return variables on oil production at various frequencies, we found that wars in which oil production and export infrastructure were damaged, resulted in a significant discontinuity in oil market trends.16 In other words, data suggests that military conflicts over oil result in significant disruptions in oil capacity in the medium term and beyond, driving prices higher for some period of time until markets can adjust.

Analysis conducted by Peter Toft explores the link between intrastate conflict and oil supply disruptions using a different methodology. By recording oil production changes during the course of the 39 civil wars in oil producing countries between 1965 and 2007, Toft concludes that intrastate conflict intermittently leads to oil supply disruptions around fifty percent of the time. 17 While Toft’s assessment serves as a valuable indicator of the short-term impacts of civil war, it fails to take into account the long-term political and social changes that drive down oil production. There is an indication that a protracted process of consolidating power that follows the transformation of internal politics can be far more harmful to oil sector investment – and thus production capacity – than simply the infrastructural damage incurred during the initial course of the conflict. Our analysis shows that war damaged facilities often remain offline for prolonged periods following conflict, if not for an indefinite timeframe.18

Militias throughout the Middle East have learned they can undermine the authority of existing political leadership in the region by overtaking oil facilities.19 A prime example of this strategy has been amply demonstrated in Libya where what might have been a successful transitioning government fell into disarray as rebel factions grabbed and turned off key oil installations, thereby denying access to eastern Libyan ports.20 A more threatening trend is the focus of ISIS on a similar strategy, one that is systematically destroying oil and gas production capacity in contested areas in Iraq, Syria, Yemen, and Libya.

There is a dual threat to regional oil facilities from both the rise of ISIS and escalating proxy wars around the Middle East. Not only is major production and export infrastructure in Iraq, Syria and Libya at risk, but ISIS is also threatening neighboring countries should conflict spread to its principal sponsors. ISIS has already attacked civilian Shia communities inside Saudi Arabia including targets in Saudi Arabia’s eastern province and in Kuwait. Saudi Arabia has fortified its northern borders with Iraq with more military hardware and troops, while Iranian forces have moved into positions near the southern Iraqi oil fields, raising the risks of border skirmishes.21 The militarization of border areas so heavily populated with oil fields and export infrastructure brings with it unique risks.

Jeff Colgan, in his case study approach to how oil can fuel military conflict, refers to several mechanisms at play in the region today: “externalization of civil wars” in petro-states and “financing for insurgencies” are contributing to violence across the region.22 And the oil revenue of Saudi Arabia, the United Arab Emirates, Qatar, Russia and Iran has to some degree insulated rulers from domestic opposition, potentially making them, as Jeff Colgan’s and others’ analyses would suggest, “more willing to engage in risky foreign policy adventurism.”23

#### War explodes oil prices—Ukraine proves

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The war in Ukraine has dealt a major shock to commodity markets. The World Bank’s latest Commodity Markets Outlook discusses how the war has disrupted production and trade of several commodities, particularly those where Russia and Ukraine are key exporters, including energy, fertilizers, and grains. These price increases come on top of already tight commodity markets due to a solid demand recovery from the pandemic, as well as numerous pandemic-related supply constraints. The potential impact of the war in Ukraine on commodity markets happens in two ways: the physical impact of blockades and the destruction of productive capacity; and the impact on trade and production following sanctions. These sanctions are having major global ramifications Russia and Ukraine export many commodities. Russia is the world’s largest exporter of wheat, pig iron, natural gas, and nickel, and it accounts for a significant share of coal, crude oil, and refined aluminum exports. Russia and Belarus are important suppliers of fertilizers. Ukraine is a key exporter of food commodities such as wheat and sunflower seed oil. The European Union (EU) and some Emerging Markets and Developing Economies (EMDEs) may be severely affected by trade disruptions. The EU imports a substantial share of its energy from Russia, including natural gas (35 percent), crude oil (20 percent), and coal (40 percent). In turn, Russia depends on the EU for its exports, with around 40 percent of its crude oil and natural gas being exported to the EU. And many EMDEs depend heavily on food supplies from Russia and Ukraine. The war in Ukraine has caused significant disruption to Russia’s energy exports. Several countries have banned or announced a phasing out of imports of some or all of Russia’s energy products, including Canada, the EU, Japan, the United Kingdom, and the United States.Several large oil companies announced they would cease operations in Russia, while many traders chose to boycott Russian oil. As a result, the price of Urals (the Russian oil price benchmark) fell to more than $30/bbl below the Brent oil price following the start of the invasion.In the long-term the departure of oil companies from Russia and reduced access to investment and technology is likely have a permanent negative affect on the country’s energy production. The fertilizer market is subjected to supply disruptions. The global fertilizer market was already under severe stress before the war, as nitrogen-based fertilizers are produced from natural gas (or coal in the case of China), and the price of natural gas had soared in 2021, pushing some fertilizer prices to their highest level since 2010. The EU imposed sanctions on Belarus in June 2021, followed by Canada, the United Kingdom, and the United States in August 2021. In early March, Russia’s Industry Ministry announced that it would temporarily suspend fertilizer exports. The announcement followed an earlier ban on ammonium nitrate, to guarantee supplies to domestic farmers. China has also suspended urea and phosphate exports through June 2022 to ensure adequate supplies for domestic food production. Shortages in fertilizers could lead to reduced agricultural yields and production particularly in EMDEs.

## Russia

### Link—economy

#### High oil prices are key to Russia’s economy

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In late 2021 and early 2022, U.S. consumers coped with significant increases in energy prices.1 While the U.S. became a net petroleum exporter in 2020 in a historic shift, the U.S. Energy Information Administration (EIA) expects a return to net importer status in 2022.23 For a net oil importing country, an increase in the price of oil acts as a growth headwind, forcing consumers and the economy as a whole to pay more for their energy consumption. Conversely, rising prices act as a growth tailwind for major net oil and gas exporters like Saudi Arabia and Russia, because they earn more revenue on every exported barrel of crude. Net Importers Are Hurt by Rising Oil Prices When oil prices rise, net importers of oil pay the price. Net importers are countries that import more oil than they export. In the U.S. the burden of high oil prices on consumers is at least partly offset by the benefits to a domestic oil industry now once again producing more crude than any other country.4 An increase in oil prices is more costly for countries producing little oil relative to what they consume, including Japan, China, Germany, India, and South Korea.5 Net Exporters Benefit as Oil Prices Increase Net energy exporters like Russia, on the other hand, see their export revenues rise alongside crude oil and natural gas prices. Oil and gas accounted for 60% of Russia's exports and 39% of federal budget revenue in 2019.6 BBC. "Will Russia Ever Leave Fossil Fuels Behind?" The energy sector is estimated to contribute up to 25% of the country's gross domestic product (GDP).7 Conversely, when energy prices drop, big exporters like Russia suffer. The 2014 oil price collapse badly hurt Russia's economy. Between June and December 2014, the Russian ruble declined in value by 59% relative to the U.S. dollar, fueling inflation that forced the Russian central bank to raise interest rates as high as 17%. By 2015, Russia, along with neighboring Ukraine, had the lowest purchasing power parity (PPP) relative to the U.S. of any country in the world. Declining PPP lowers living standards, as imported goods become more expensive. Russia also receives less economic benefit from lower pump prices than the U.S. does, because Russians consume much less oil and gas than Americans. More than 70% of Russia's oil production is exported.8 In 2021, with crude oil prices hitting seven-year highs, Russia reaped a windfall. Budget revenue increased 35% from 2020, while its current account surplus rose to 7% of GDP.9 Higher energy prices supported a broad economic recovery, with GDP up 10.5% year-over-year in Q2 2021 before slowing to a 4.3% annual gain as of Q3.10

#### Any reduction in oil prices pushes Russia’s economy over the brink

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In April, just weeks after he launched the invasion of Ukraine, Russian President Vladimir Putin maintained that the West could never strangle Russia’s economy. The barrage of American and European sanctions had not succeeded and would not succeed in bringing his country to its knees. “We can already confidently say that this policy toward Russia has failed,” he told his officials. “The strategy of an economic blitzkrieg has failed.”

Such defiant posturing can be expected of Putin and other Russian leaders. But now, six months after the beginning of the war and the imposition of sanctions, many observers are questioning whether Western sanctions have had the tough effects their architects promised. International observers such as the International Monetary Fund have revised their projections of Russian GDP upward from earlier this year. Compared with initial forecasts made right after the imposition of sanctions, Russia’s economy has done better than expected, partly because of deft technocratic Russian policymaking and partly because of tight global energy markets, which have kept the price of oil and gas high.

Russia’s economic overperformance must be placed in context, however. Few observers and policymakers expected sanctions to cause enough pain to force Russia out of the conflict in a matter of months, so Russia’s ongoing war shouldn’t be a surprise. Yet **Russia’s economy is still hurting**; it is suffering a steeper growth slowdown than was seen during the 2008 financial crisis and one that is unlikely to be followed by a postcrisis rebound. Living standards are being supported by social spending that will be difficult to sustain and that will likely **force tough decisions** about the government budget over the coming year. Thus far, Putin has promised Russians that he’s fighting a “special military operation,” not a war that could impose tough sacrifices on the population. As time passes, however, the cost of the war and the effects of sanctions on ordinary Russians will only grow.

For a health check on the Russian economy, start with some macroeconomic data. Russia’s **GDP** has **shrunk by** **around five percent compared with last year,** with the rate of decline increasing each month since the war began. Industrial production, which includes Russia’s oil and gas industries, has fallen by only about two percent compared with last year (a reflection of high energy prices), although the manufacturing segment of Russian industry has fallen by 4.5 percent. Inflation stands at just over 15 percent, down somewhat from the nearly 18 percent peak after the ruble slumped, then recovered, in March. Adjusted for inflation, monthly wages are down by about six percent compared with last year. (Some analysts have expressed skepticism about Russia’s official data, yet there is no evidence that the state statistics agency is engaged in large-scale manipulation.)

Russia’s inflation statistics may not fully capture the reality that buying certain products is now occasionally difficult (in the case of iPhones) or nearly impossible (in the case of Lexus automobiles). Similarly, inflation data struggle to quantify the impact of reduced quality. Russia’s government, for example, is changing regulations to allow the sale of vehicles without airbags or antilock brakes, which are now difficult to produce because of sanctions-induced supply chain problems. This degradation in quality won’t show up in inflation data, but it will eventually be felt by Russians, especially the urban, wealthier Russians who consume more of the imported goods that are now harder to access.

Even accounting for the inflation captured by government statistics, **wages are trending sharply downward**, around six percent lower compared with last year. Social welfare payments such as pensions, which are the primary income source for older Russians, have been eroded by inflation since the war began. The government increased pension payouts by over eight percent in June to compensate, but without more such expensive social spending increases in the coming months, the typical Russian’s income will decline in the second half of the year. The fact that retail sales are down by nearly ten percent suggests that consumers have already started saving in anticipation of tighter budgets to come.

Although households are only just beginning to feel the impact of lower living standards, some industries have already been hit hard. Rather than looking at aggregate industrial production data, which include both raw materials and manufacturing firms, it is more insightful to analyze each sector separately. The raw materials sector has been only slightly affected, which is no surprise given that prices are high and that Western sanctions have been designed to keep most commodities, thus far including oil, flowing freely.

The Russian economy owes much of its resilience to its trade in natural resources. With quiet diplomatic support from the United States, the United Kingdom and the EU have been watering down sanctions that were supposed to take effect against Russian oil exports later this year. To keep energy prices from spiking, the West has backed away from some efforts to stop Russia from redirecting oil exports to other customers, such as China and India. Now, under recent tweaks to sanctions, European firms will be allowed to ship Russian oil to third parties.

Because the West has implemented few significant sanctions on Russia’s oil and gas exports, and because the EU’s oil import ban doesn’t take effect until December, the volume of Russian oil exports is basically unchanged since sanctions were imposed. Sanctions are now forcing Russia to sell oil at around a $20 per barrel discount to global benchmark prices. Still, the latest monthly data that Russia’s government released on its revenue from taxing oil suggest the country is making roughly as much in export revenue as it did in January. By contrast, revenues from the export of natural gas—far less important to Russia than oil exports—have slumped after the Kremlin restricted its sale to Europe.

Unlike Russia’s energy industry, the **rest of Russia’s industrial sector has been hit hard**. Among the worst affected sectors have been cars, trucks, locomotives, and fiber optic cables, each of which has seen production fall by over half. In other sectors less exposed to foreign ownership or complex supply chains, such as textiles or food processing, production is flat or in some cases has increased relative to last year.

One cause of this industrial disruption is the **withdrawal of Japanese, U.S., and European firms** that had **factories** in Russia. Some of these factories will reopen under new Russian ownership, but operating them independently may prove difficult. Manufacturers are also struggling to source necessary materials. Accessing components from abroad is now far trickier, because even products not under formal restrictions are harder to access, ship, and pay for. “I cannot say we’re facing a total blockade,” the CEO of Transmashholding, a Moscow-based railroad equipment firm, told Russian media, referring to the difficulties his firm has in shipping and paying for imported components. “But we face increased friction.”

A key question over the coming months is whether these industrial disruptions intensify or are resolved. On the one hand, Russia has now had nearly half a year to establish alternative payments and logistics networks, which should allow some crucial nonsanctioned imports to reach the country. On the other hand, Russian firms when surveyed say they are continuing to draw from existing inventories, implying that they are still struggling to source necessary components. Monthly data show that Russian imports of industrial goods and components remain far below prewar levels.

The fate of Russia’s industrial sector matters for several reasons. **Industry is a crucial source of employment**, especially in what Russia calls monogorods, or towns, often in the Urals or Siberia, that depend on a single factory or industry. In the past, layoffs in such cities have caused major protests and social upheavals that have proved politically destabilizing. Recent research by a Russian think tank found that half of all monogorods will face a direct negative impact due to sanctions. Russia’s government will struggle to find funds to support beleaguered industries given the government’s own tightened budget.

Russia’s government finances have gotten harder to parse now that the Kremlin has stopped releasing details about spending, presumably to hide the costs of the war. In April, the last month for which Russia released detailed data, **defense spending had increased by 40 percent** on the year. In addition to higher salaries and operating costs to fund the attack on Ukraine, the Kremlin will also need to allocate substantial future resources to rebuilding the vast stock of equipment damaged or destroyed on Ukrainian battlefields. The **costs of the war are adding up**, not only on the central government’s balance sheet but also for regional governments, which are being asked to raise volunteer battalions.

This spending spree will spur inflationary pressure over the coming year. The government isn’t bringing in as much revenue as before. The modest decline in world oil prices since June—plus the significant discounts at which Russia now must sell its oil—has brought Russia’s oil tax revenue down to more normal levels compared with the bumper revenues it was generating in the initial months after the invasion. Yet non-oil tax revenue has fallen dramatically. Adjusting for inflation, over the first seven months of 2022, non-oil revenue declined by around 15 percent, a number that will probably increase further over the rest of the year.

As a result, Russia’s budget is veering toward a substantial deficit if current trends continue. **This situation could change in the coming months, particularly if oil prices—and thus tax revenue—increase.** Yet demands for spending are unlikely to disappear so long as the war continues and living standards decline.

If the size of the budget deficit grows, the Kremlin will find itself in a complicated position. It entered the war with hardly any debt, but Western sanctions have blocked its ability to issue new bonds to most foreign investors. It could let the ruble decline against the dollar, which because Russia’s government spending is all ruble denominated, would have the effect of helping to balance the budget. But a slump in the ruble would drive up inflation and, in the process, lower living standards and undermine the Kremlin’s narrative that sanctions aren’t working and that the Russian economy is stable.

In some sense, the Kremlin is correct in insisting that Russia’s economy has stabilized. Its banks are solvent, most industries are operating like normal, and the crucial energy sector continues to pump oil. There is plenty of food on store shelves, even if luxury cars are in short supply. The production of cars and washing machines will be far lower than expected, so consumers will defer major purchases if they can. The optimistic scenario for the Kremlin is that Russians tighten their belts and muddle through.

Nevertheless, the costs of the war and sanctions are adding up, even if the initial impact was less dramatic than the West hoped or Russia feared. For now, Russia’s leaders are happy to have survived six months of Western sanctions. Over the coming year, however, Russian industry will continue to struggle to adapt to a world without imported Western components. Barring an upswing in oil prices, Russia’s government will face **tougher tradeoffs** between continuing social spending and tolerating budget deficits and high inflation. Russia’s economy is not going to collapse in a way that forces a halt to the Kremlin’s war effort. The country does, however, face a sharp recession, a long grind of lower living standards, and **little hope for a quick rebound**

#### Falling oil prices fuel Russian aggression

**Maugeri** 20**14** [(Leonardo, Former Senior Fellow, Geopolitics of Energy Project Expertise: Economics & Global Affairs Oil & Energy Prices Energy) “Why Low Oil Prices Could Make Russia's Putin Even More Combative,” Harvard Kennedy School Belfer Center for Science and International Affairs, https://www.belfercenter.org/publication/why-low-oil-prices-could-make-russias-putin-even-more-combative, November 19, 2014] TDI Sam

If history is any guide, Vladimir Putin's iron grip on Russia could be threatened by the lowest oil prices in a decade. It also partly explains his increasingly belligerent stance toward the West.

Crude oil and natural gas prices have been central to Russian prosperity for decades. As they fluctuated, so did the country's fortunes. And they have led Russia to outward aggression before and could again.

For every dollar off the price of a barrel of oil, the Russian government loses $1.7 billion in annual revenue. The Russian government accrues about half of its revenue from the oil and gas economy. If prices remain at their current level, Moscow would bring in almost $50 billion less revenue in 2015. Subtract another $10 billion to $15 billion due to the renegotiation of gas contracts and that's a major hit to a revenue budget of around $400 billion, and a government that is depending on $100-a-barrel oil to meet its 2015 budget deficit goals.

In the 1970s, the explosion of crude oil and natural gas prices—linked in Russian export contracts—brought relative wealth to Soviet Union. That ushered in a brief "golden" season during the last years of the Brezhnev regime. The collapse of oil in 1986 undermined the stability of Gorbachev's government, spreading discontent.

The low prices prevailing during the 1990s kept Boris Yeltsin in a state of permanent instability, forcing his government into desperate moves like the uncontrolled privatization—tantamount to a fire sale—of state assets. That persisted until the 1998 collapse, when Russia risked a financial default.

Oil prices rose again after the appointment in August 1999 of a relatively unknown political figure as the new prime minister, a move interpreted by many as just another Yeltsin experiment doomed to failure. That prime minister was Vladimir Putin, who was eventually elected President of Russia in 2000, which kicked off a decade in which oil prices reached historic highs. Oil windfall profits allowed Putin to build up an undeniable domestic consensus, restoring political stability and re-launching Russia on the international scene.

Now, however, the combination of the Ukraine crisis, international sanctions and falling oil prices open up new, worrisome scenarios for Putin, Russia and the world order. International sanctions that have hurt the Russian economy have further added to the pressure on Putin.

In the last few months, Moscow has started cutting public services to the bone, slashing health and education expenditures and some basic allowances for the poor. Meanwhile, the rapid downfall of the ruble is dramatically reducing the spending power of most Russian citizens and threatens to push up inflation very soon.

The effect of low oil prices, combined with related factors, is already being seen in the actions of the Putin regime.

Along with the Ukrainian crisis, growing popular discontent could push Putin to take an even more aggressive stance both at home and abroad to squash domestic dissent and lay the blame on foreign enemies for Russia's woes. (This also might allow Putin to remain popular in Russia where his aggressive international moves are celebrated.) Many Russians blame the West—and the U.S. in particular—for much of what is going on after the explosion of the Ukrainian crisis. Mikhail Gorbachev himself, after initially standing with Putin, on Nov. 8 in Berlin warned the world that a new Cold War could be looming as a result of the many mistakes made by the West vis-à-vis Russia.

### impact—lashout

#### Economic decline sparks Russian lashout

Frederick et. al. 22 [((Bryan, is the associate director of the Strategy and Doctrine Program within RAND Project AIR FORCE, and a senior political scientist at the RAND Corporation. His research interests include interstate deterrence and escalation management, conflict forecasting, military interventions, territorial disputes, international norms, the law of armed conflict, and regional security issues in Europe, East Asia, South Asia, and the Middle East.), Samuel Sharap, Scott Boston, Stephen J. Flanagan, Michael J. Mazarr, Jennifer D. P. Moroney, Karl P. Mueller), “Pathways to Russian Escalation Against NATO from the Ukraine War,” Rand Corporation, 2022, <https://www.rand.org/pubs/perspectives/PEA1971-1.html>] SP TDI

Pathway 3: Domestic Instability in Russia Sparks Aggression

A dramatic increase in domestic, economic, and political instability in Russia also could lead the Kremlin to decide to attack NATO member states. Crucially, Russian leaders see antigovernment protests as a key element of a potential Western-backed campaign to overthrow their regime. According to Russian strategists, several other components of such a campaign are taking place: instability on Russia’s periphery, a buildup of U.S. forces near Russian borders, and Western economic warfare (Podberezkin, 2015, p. 303). Eventually, these strategists say, this campaign would culminate in direct kinetic strikes on the homeland. Therefore, Moscow is more likely to see large-scale protests that begin in the current environment as evidence of a coordinated Western campaign to topple the Russian government. Against this backdrop, officials from the United States or other NATO governments speaking openly about the possible “physical elimination” of President Putin, as one NATO foreign minister put it (“Luxembourg Foreign Minister Calls . . . ,” 2022), or highlighting the prospect that domestic unrest would depose the current regime, could heighten the Russian leadership’s perceptions that popular discontent is driven by U.S. or allied intelligence operations and therefore constitutes a non-kinetic attack on the homeland. The Kremlin would likely conflate the security of the regime and the security of the country.

To plausibly affect the Kremlin’s calculus about horizontal escalation, instability would have to grow significantly in size and scope beyond the relatively small antiwar protests that took place during the first weeks of the war in major cities. However, as opposed to the war itself, the dramatic economic contraction that has resulted from the war might well be the spark for such broader popular unrest once economic pain is felt over the medium to long term. The protests would likely need to reach the point where they threaten to exceed the Russian government’s ability to control them before Moscow would contemplate taking actions abroad.

Because the Russian government would likely view protests of this scale as a non-kinetic NATO attack, it might decide to strike NATO allies to compel a cessation of external support for the domestic threat. Russian responses are more likely to begin with non-kinetic attacks (e.g., cyberattacks against critical infrastructure targets such as power grids, power plants, or key information or telecommunications systems, including satellites) in an effort to dissuade future perceived NATO aggression at minimal cost. If these attacks are successful in substantially disrupting U.S. or allied economic and political life, the United States or other allies might feel compelled to respond in kind by disrupting similar systems within Russia. Such attacks, which would compound existing stresses from the war, could lead Russian leadership to conclude that it has exhausted non-kinetic options for reducing NATO threats to regime survival and therefore decide to turn to kinetic attacks.

#### A weakened Russia lashes out in Ukraine—that goes nuclear

**Faulconbridge and Light** 20**23** [(Guy and Felix, As Moscow bureau chief, Guy runs coverage of Russia and the Commonwealth of Independent States. Before Moscow, Guy ran Brexit coverage as London bureau chief (2012-2022)) “Putin ally warns NATO of nuclear war if Russia is defeated in Ukraine,” Reuters, https://www.reuters.com/world/europe/putin-ally-medvedev-warns-nuclear-war-if-russia-defeated-ukraine-2023-01-19/, January 19, 2023 2:37 PM UTC] TDI Sam

An ally of President Vladimir Putin warned NATO on Thursday that a **defeat of Russia in Ukraine could trigger a nuclear war**, while the head of the Russian Orthodox Church said the world would end if the West tried to destroy Russia. Such apocalyptic rhetoric is intended to deter the U.S.-led NATO military alliance from getting even more involved in the war, on the eve of a meeting of Ukraine's allies to discuss sending Kyiv more weapons. But the explicit recognition that Russia might lose on the battlefield marked a rare moment of public doubt from a prominent member of Putin's inner circle. "The defeat of a nuclear power in a conventional war may trigger a nuclear war," former Russian President Dmitry Medvedev, who serves as deputy chairman of Putin's powerful security council, said in a post on Telegram. "Nuclear powers have never lost major conflicts on which their fate depends," said Medvedev, who served as president from 2008 to 2012. Striking a similar tone at what he described as an anxious time for the country, the head of the Russian Orthodox Church said in a sermon for Epiphany that trying to destroy Russia would mean the end of the world. Medvedev said NATO and other defence leaders, due to meet at Ramstein Air Base in Germany on Friday to talk about strategy and support for the West's attempt to defeat Russia in Ukraine, should think about the risks of their policy. Putin casts Russia's "special military operation" in Ukraine as an **existential battle** with an aggressive and arrogant West, and has said that Russia will use all available means to protect itself and its people. 'ALARMING TIME' The Kremlin chief has sought in recent months to gird Russians for a much tougher battle while promising eventual victory in a war that the leaders of the West say they will never let him win. The United States has denied Russian claims that it wants to destroy Russia, while President Joe Biden has cautioned that a conflict between Russia and NATO could trigger World War Three. But top Putin allies say the tens of billions of dollars' worth of U.S. and European military assistance to Ukraine shows that Russia is now **in a confrontation with NATO itself** - **the Cold War nightmare** of both Soviet and Western leaders. Patriarch Kirill, the head of the Russian Orthodox Church, said in a sermon: "We pray to the Lord that he bring the madmen to reason and help them understand that any desire to destroy Russia will mean the end of the world." "Today is an alarming time," state news agency RIA quoted him as saying. "But we believe that the Lord will not leave Russian land." Putin's foreign minister, Sergei Lavrov, told reporters in Minsk that Russia would do everything to ensure NATO and European Union leaders "sobered up" as soon as possible. "I hope that the sobering up will come," Lavrov said. "We will do everything so that our colleagues from NATO and the European Union sober up as soon as possible." NUCLEAR DOCTRINE Russia’s Feb. 24 invasion of Ukraine has triggered one of the deadliest European conflicts since World War Two and the biggest confrontation between Moscow and the West since the 1962 Cuban Missile Crisis. The United States and its allies have condemned Russia's invasion of Ukraine as an **imperial land grab**, while Ukraine has vowed to fight until the last Russian soldier is ejected from its territory. Since Russia invaded Ukraine, Medvedev has repeatedly raised the **threat of a nuclear war**, but his admission now of the possibility of Russia's defeat indicates the level of Moscow's concern over increased Western weapons deliveries to Ukraine. **Russia and the United States**, by far the largest nuclear powers, hold around **90% of the world's nuclear warheads**. Asked if Medvedev's remarks signified that Russia was escalating the crisis to a new level, Kremlin spokesman Dmitry Peskov said: "No, it absolutely does not mean that." He said Medvedev's remarks were in full accordance with Russia's nuclear doctrine which allows for a nuclear strike after "aggression against the Russian Federation with conventional weapons when the **very existence of the state is threatened**".

## Warming

### Link—renewables

#### Positive relationship between oil prices and renewable investment – empirics prove

**Dubey 22** [(Anand is an Associate Director at BCC Research, where he focuses on market research and data analysis. He earned an MBA, served as an industry analyst for more than a decade, and wrote a wide variety of market research reports.) "High Oil Prices to Push Renewable Energy Investment," <https://blog.marketresearch.com/high-oil-prices-to-push-renewable-energy-investment>, 9/19/22] TDI

Many countries across the world are grappling with inflation. In the US, the annual inflation rate reached 9.1% in June 2022, the highest since 1981. One of the key reasons is high oil prices, which are troubling everyone, from consumers to businesses.

Spikes in oil prices are not new and have happened many times in the past, be it the Iran-Iraq war, Iraq’s Kuwait invasion, the 9/11 attacks, or the 2008 financial crisis. This time the culprit is Russia’s invasion of Ukraine.

Renewable energy is a long-term solution that can help us reduce our oil dependency and save us from the economic miseries caused by it from time to time. Oil and renewables, though they are different from each other in many aspects, have a peculiar relationship. In this article, we will explore how oil prices impact investments in renewables and what is the preferred choice of investors now.

Investment in Renewable Energy vs. Oil Prices

To move away with oil, gas, and coal, many countries have been framing policies and taking initiatives in favor of renewable energy. While most problems associated with fossil sources are futuristic (such as carbon footprint and clean air, etc.) and do not often motivate policymakers to respond quickly, high oil prices create imminent pressure and help renewable energy go up on the policymakers’ priority lists.

Oil Prices vs. Renewable Energy Investment 2000-2020

Figure 1 shows oil prices and public investments in renewable energy from 2000 to 2020. We can see a sudden rise in renewable investments in 2009 after a continuous increase in oil prices from 2002 to 2008. Oil prices remained at a higher level between 2010 and 2014, and so did renewable investments. The prices dropped in 2015 and remained at a lower level afterward than they were during the past five years, and we saw a downfall in renewable energy investments starting in 2017 and 2018.

Recently, Russia’s invasion of Ukraine escalated the prices again. And coincidentally, investments during the first six months of 2022 are up by 33% in solar and 16% in wind from the first half of 2021 (Source: ETEnergyWorld). This all indicates a positive correlation between oil prices and investments in renewables.

There are other factors too that drive investment in renewable energy; for instance, the fact that renewables allow small investments compared to conventional power. Renewable farms like wind and solar can be built with smaller investments than what is needed for conventional energy plants and thus attract a number of smaller private investors. Another factor is price, which came down for renewables with technological advancements, making it more lucrative for investors. But among all, oil price appears to be one of the critical factors, at least when we look at the data.

Investors’ Preferences for Renewable Energy

At present, hydroelectric is the largest renewable energy source in terms of installed capacity. However, this oldest renewable electricity source has its own challenges. A hydroelectric plant takes a huge investment, building it takes significant time, and it has ecological and social issues.

Top 3 Renewable Energy Sources Chart 2020, 2022-2027

Wind was the second largest source by the end of 2020, but solar came ahead of wind in 2021. In the next five years to 2027 (Table 1), solar will have maximum growth among the top three sources. Both wind and solar offer great potential; one is usually better than another, depending on the location. Yet solar ended up being the most preferred choice of investors. As per IRENA data, public investments in solar were 1.5 times higher than wind during the last five years ending in 2020 and 2.6 times higher in 2020 alone.

The size of a solar energy project can vary from minuscule (such as a solar light) to large plants spanning acres, welcoming all sizes of investments. Solar PV systems are inexpensive and more accessible to install than complex installations of wind or hydroelectric turbines. In recent years, the efficiency of solar PV has increased noticeably, along with significant cost reductions. As a result, solar turned out to be the most preferred renewable energy source for investors.

Renewable Energy Market Research Reports

If you would like to explore renewable energy market research in more depth, please refer to the following resources:

Solar Energy Markets, July 2022

Renewable Energy: Technologies and Global Markets, June 2022

Biogas Upgrading: Technologies and Global Markets, November 2020

Biofuels: Global Markets, April 2020

Biodiesel Feedstocks: Technology, Synthesis, Efficiency and Policies, March 2020

#### Increasing oil prices increase renewable energy consumption

**Sahu** **et al. 21** [P.K., Solarin, S.A., Al-mulali, U.  “Investigating the asymmetry effects of crude oil price on renewable energy consumption in the United States.” Environ Sci Pollut Res 29, 817–827, <https://doi.org/10.1007/s11356-021-15577-9>, 8/3/21]

Abstract

The reduction in oil prices might make crude oil a cheaper alternative to renewable energy (RE). Given this, the present paper examines the effect of fluctuation of oil prices on the use of RE in the United States (US) during the period 1970 to 2018. We constructed two nonlinear autoregressive distributed lag (NARDL) models to examine the effect of the positive and negative oil price shocks on the use of RE in the US. The RE consumption is taken as the dependent variable and the gross domestic product (GDP), Brent crude prices, population density, trade openness, and price index as independent variables. The result revealed that the rise in crude oil price, GDP, and population density will increase RE use in the short run and in the long run as well. Moreover, the study finds that any decrease in oil prices will decrease RE use in the short run and its effect will eventually diminish in the long run. On the policy front, it is suggested that US should raise its energy security by reducing its dependency on imported crude oil and increase the role of RE through the imposition of taxes on oil and increase the base of production and consumption through a series of measures. Access provided by California State University Systems Trustees of the State of California Introduction In the last four decades, the dependency on energy has increased much faster than ever before. The world witnessed a paradigm shift in the source of energy from wind, water, and coal to oil and natural gas during this period. Fossil fuel played a substantial role in the source of modern energy generation as most of the traditional energy generating sources was replaced. However, rise in the prices of oil and the environmental consequences of greenhouse gas emission highlighted the importance of an alternative source of energy, a replacement to the use of crude oil. More than a decade now, the importance of renewable sources of energy has increased across the globe, including in the US. The political commitment of G7 countries and the European Union to future sustainability of energy through the availability of RE shows its importance (European Commission News, May 2015). Even the RE initiatives of the G7 countries aim at making energy accessible to all in the African region by improving RE by 2030 (United Nations 2015). Many countries started to encourage the use of alternative source of energy and supported technological innovation, mechanism and policies to enhance the production of RE (Dogan et al. 2021). The prime objective of these efforts is to increase the availability of energy for all through the global RE system at a cheaper and affordable price along with protecting the environment. As it is a cheaper alternative and has low carbon emission, the US has witnessed a rise in both production and consumption of RE in recent years (World Bank 2020). Even the expansion of renewables has often surpassed the expected target (Schmalensee and Bulovic 2015); and in particular, the growth of solar energy has surpassed the target and projection of the International Energy Agency’s (IEA). While the production and supply of renewables is on a rising trend, the fluctuation in the price of crude oil, in particular, a decrease in crude oil prices has left several questions unanswered in the hands of the academia and policy makers. It is evident that between 2011 and 2020 (April), the price of the crude oil declined from a high of about $120 per barrel to as low as $21 per barrel. Though the oil price has increased thereafter, but in general, the declining trend in the oil prices in the last one decade might affect the demand for RE and derail the ambition of a carbon-free energy future. To be precise, the falling price of the crude oil might create two possibilities. The first is based on the notion that any fall in the price of crude oil would increase its demand. This might have some serious consequences on the future demand for RE. In other words, a reduced oil price would again increase the demand for oil, substituting the alternative use of the renewable resources in the US. The second possibility is that, the cheaper the crude oil, the more funds that the country will have to promote RE projects, which in turn, increase the demand for RE sources. Consequently, based on these two possibilities, this paper is motivated to investigate whether the increase or the decrease in crude oil price would affect the demand for RE in the US. The US is the world’s largest crude oil consumer and the second-largest producer of CO2 emission. Therefore, moving toward crude oil might have serious consequences on world environmental degradation. Moving toward RE sources is important to compact greenhouse gas emission that mostly comes from the consumption of fossil fuels. Therefore, the core objective of this research is to explore the impact of oil price fluctuations on the use of RE in the US. RE consumption in the US is on an increasing trend. The US is among the few countries in the world having the best resources along with the knowledge of innovation and financing abilities. Since the beginning of late 18th century, fossil fuel has played a major role as the source of energy for the US economy. However, increased concern about the greenhouse gas emission and the US becoming a major global player in the production and consumption of cleaner energy have shifted the outlook since the beginning of the current century. Toward the late nineties, energy consumption in the US shifted to RE, mostly derived from the wind, solar and biofuels. The share of RE in the total energy consumption in the US increased from just about 3% in the late nineties to 7.5% in 2010 and to 11% in 2019. The international Renewable Energy Agency (IRENA) predicts that the share of RE in the US could increase to 27% by 2030 with more than 50% coming from the power sector. The power sector which accounts for more than 55% in the total energy consumption at present shows an increasing share being generated from renewable sources. With certain assumptions, in 2020, the US Energy Information Administration forecast that the RE production would increase from 18% in 2019 to 31% in 2050. The electric power sector, the largest source of energy to the US has undergone a drastic shift in its production from fossil fuel and nuclear power to wind and solar sources. Data shows that the share of renewables in electricity production registered an increase from 11% in 2010 to 14% in 2014 and 20% in 2020. With increased renewable electricity production and continuous fall in the price of natural gas, the wholesale prices of electricity has fallen in the US market. Increased production of RE and a fall in the prices of natural gas and other petroleum products could pose a threat to the consumption of renewables. However, data shows a satisfactory trend in the consumption of RE as it has increased from 6.5% in 2007 to more than 12% in 2019. Over the years, the development of technology, declining cost, and improving performance is making solar and wind more popular and competitive than other sources of energy. The production of energy (e.g. electricity) from these sources will minimize emission and reduce the cost of energy; and its supply is unlikely to decline over time. The policies in regard to RE at the state and central levels are also encouraged and implemented so as to popularize its use. States such as California, New Jersey, and Massachusetts have enacted new laws for RE supply and consumption, for e.g., California enacted policies to supply 100% cleaner energy by 2045, New Jersey and Massachusetts have prepared a blueprint to produce 50% and 35% of the energy from renewable sources, respectively. The effort of these governments could increase RE production; however, its use will primarily depend upon the prices of the available alternative energy and the strictness of the law in future. Given that each country has different economic characteristics, the panel result might not deliver a clear or an accurate conclusion. Moreover, majority of the studies examined the positive effect of oil price shocks (linear effect of oil prices) on RE by ignoring the negative effect of oil price shocks. Given this, the present study used the nonlinear ARDL model to find the nonlinearity effects of oil prices (increase or decrease) on RE use in the US. Literature review Many studies have examined the main macroeconomic determinants that impact energy use in general. The most utilized variable is the GDP growth (Omri and Kahouli 2014; Kyophilavong et al. 2015; Rafindadi and Ozturk 2016; Shahbaz et al. 2016; Dogan and Aslan 2017; Ben Jebli et al. 2019; Mujtaba et al. 2020 and so forth). The relationship between GDP growth on air pollution is well-examined by the previous studies and the effects are clearly underlined. Many previous studies concluded that the increase in economic activities increases environmental degradation more in developing and emerging economies than the developed economies. This can be linked to the environmental Kuznets curve (EKC) hypothesis. At the early stages of economic development, the country is basically a polluting industrial economy until a certain stage of economic development; then the economy will transform into a clean service-based economy. Moreover, when income is higher, citizens will have more preference for better environmental quality (Dinda 2004; Erdogan et al. 2020). Foreign direct investment (FDI) is a widely utilized pollution indicator (Omri and Kahouli 2014; Mudakkar et al. 2013; Azam et al. 2015, 2019; Khan and Ozturk 2020; Abdo et al. 2020; Mujtaba et al. 2021). FDI can have different effects on environmental degradation depending on the type of investment. Basically, large industrialized countries tend to send their dirty factories to less developed nations with less stringent environmental regulations, cheap labor, and resources. Therefore, FDI increases environmental degradation mostly in less developed countries than the developed ones. Similarly, the development of the financial institution is proven to be an important indicator of environmental degradation (Sadorsky 2010; Zaidi et al. 2019; Nasir et al. 2019 and so forth). Population is an important indicator of environmental degradation as the world population is growing rapidly far more than the earth’s ability to support. Therefore, the rise in population has proven to increase environmental degradation in most of the countries (Omri and Kahouli 2014; Azam et al. 2015; Liu et al. 2019, Mujtaba et al. 2020 and so forth). Despite the differences in methodologies and the countries concerned, most of the existing studies have established that variables such as GDP, FDI, financial institutions, and population have significant consequence on the use of energy. Besides these, the impact of energy prices on energy consumption is not new, as found by many scholars in their empirical analysis (Sadorsky 2010; Aguirre and Ibikunle 2014; Murshed and Tanha 2020; Apergis et al. 2021). Emphasis on the key influences of RE use is relatively a newly focused area. Much less is known about the impact of energy price, particularly the oil price on RE use, though several other aspects of RE are studied and debated intensively. In context to the relation between the oil price and the RE, Omri et al. (2015), Aguirre and Ibikunle (2014), Ferrer et al. (2018), Cao et al. (2019) found that oil price negatively affects RE consumption and investment. Majority of these studies investigating the relationship between oil price and use of RE considers a panel of countries rather than a single country for analysis. For example, Coban and Topcu (2013) while studying in context of EU27 countries find a negative relation of oil price with the RE demand. The study by Aguirre and Ibikunle (2014) on 38 countries of the EU OECD and BRICS finds that oil price has a marginal negative impact on consumption of RE. The study by Doytch and Narayan (2016), involving 74 countries, shows evidence of negative influence of the energy price index on RE consumption in a model based on the Blundell–Bond dynamic panel estimator. Bondia et al. (2016) in a multivariate framework find that in the long run, oil prices have no effect on RE consumption, but influences it in the short run. Similarly, Dogan et al. (2021) find that oil price has weaker relation with RE consumption than RE production. However, Murshed and Tanha (2021) in the context of South Asian economies during the period 1990- to 2018 have found that crude oil prices influenced the RE transition. Though most of these studies find a weak or negative relationship between oil price and the use of RE, its intensity varies in different studies. Despite the evidence of a negative relationship between the two variables, these studies fail to provide a clear explanation behind such a relationship. On the other hand, some of these studies suggest the reason for such negative relationship could be the small sample size. Some others suggest that the relationship is because of the nature and pattern of energy consumption of these countries, industrial or otherwise. Moreover, some other scholars suggest that the negative relationship between the two variables is because crude oil and RE are complementary goods. However, scholars such as Lin and Omoju (2017) found that the surge in oil prices resolves an increase in the demand for renewables. Such a relationship exists because RE sources are a substitute for crude oil; therefore, the rising prices of crude oil will make RE a cheaper alternative. Particularly, in the context of the US, there are many of studies (Menyah and Wolde 2010; Dogan and Ozturk 2017; Dogan and Turkekul 2016; Ben Youssef 2020, etc.) that examine different aspects, particularly the renewable/nonrenewable energy use and CO emission. For example, Menyah and Wolde (2010) using a modified Granger causality test, studied the relationship between carbon dioxide (CO2) emission, renewable and nuclear energy consumption and real GDP for the period 1970 to 2007. Dogan and Ozturk (2017) studied the influence of GDP, RE and non-RE consumption on CO2 emission in the EKC model for the period 1980 to 2014. In another study, Dogan and Turkekul (2016) investigated the causal relationship between CO2, energy consumption, GDP, trade openness, urbanization, and financial development for the period 1960 to 2010. Ben Youssef (2020) studied the impact of foreign research and development (R&D) spillovers on RE consumption and pollution using the database of the period 1980 to 2016. Despite the availability of a number of studies in the context of the US, we have not come across any specific study, which properly examined the relation between the crude oil prices and RE in the US alone. This motivates us to empirically examine this topic in the US context. However, there are many existing studies, which used the panel data to find an overall result for a group of countries (Inglesi and Dogan 2018; Erdogan et al. 2020; Mujataba and Jena 2021, etc.) and some including the US. Some other studies specific to the US found the impact of oil prices on CO2 emission (Hammoudeh et al. 2014; Boufateh 2019; Ullah et al. 2020, etc.). For example, Hammoudeh et al. (2014) using the daily sample from July 2006 to November 2013 under a quantile regression framework find that increase in crude oil price reduces CO2 substantially in the US. Boufateh (2019) using the NARDL bound testing approach over the period 1976 to 2013 suggests that positive (negative) fluctuations in crude oil prices reduces (increase) CO2 emission in the US. Similarly, applying NARDL for the period 1981 to 2018, Ullah et al. (2020) find that positive shocks in diesel prices in the US have a significant negative impact on carbon emission in the long run. Given this, empirical studies on the topic under the present investigation have not been properly covered for the US. However, a recent study by Guo et al. (2021) in the context of G7 countries has explored a short-term and long-term dynamic relationship between the oil price and consumption of RE using the NARDL model. The result reveals that for Canada, the US, and Italy, an increase in oil prices has a stronger impact on RE consumption than a negative change. Our study differs from this in terms of the data coverage, variable used, and the methodological specifications to capture RE consumption. While Guo et al. (2021) used linear and NARDL, we constructed two NARDL models to examine the effect. Methodology Model and data Relying on the findings of past studies (Coban and Topcu 2013; Doytch and Narayan 2016; Mujtaba et al. 2020 and Mujtaba and Jena 2021), we utilized the following two models specification (to examine the robustness of the results) to examine the variables that determine RE consumption during the period 1970 to 2018. Different from the previous studies, the nonlinear ARDL is utilized to examine the effects of the positive and the negative shocks in oil prices on RE consumption. lnREt=α1+α2 lnOPt+α3 lnGDPt+α4 lnPDt+α5 lnPIt+εt (1) lnREt=α1+α2 lnOPt+α3 lnGDPt+α4 lnTRDt+α5 lnPIt+εt (2) Here, lnRE is the natural log of RE consumption (millions of kilowatt-hours), lnOP is the natural log of Brent crude price (US$ per barrel), lnPD is the natural log of population density (per sq. km of land area), lnTRD is the natural log of trade openness measured in millions of constant US dollars and is calculated as (Export+Import)/GDP, lnPI the natural log of price index and εt is error term with the assumption of normal distributionFootnote1. The above model represents basic RE consumption. It contains GDP as an indicator of income and price index, since changes in the price level might affect the demand (consumption) of RE. Moreover, the price of crude oil is also included, which represents the price of an alternative source of energy, the increase in crude oil prices will make RE a more attractive alternative. Population density is a determining factor of RE as the increase in population will increase energy use in general. Therefore, high population density might increase the consumption of RE. Moreover, the increase in the country’s price level will cause a decline in the consumer purchasing power, which will cause a reduction in the consumption of RE. The data of RE consumption per capita was obtained from the Energy Information Administration (2016), GDP, Brent crude oil prices, population density, and price index were retrieved from the World Development Indicators (2020), and trade openness was obtained from the OECD database (2020). Residual augmented least squares (RALS) unit root test The first step is to check the stationarity; therefore, the RALS unit root test of Meng et al. (2014) is used. The specification of the model is as follows Δyt=δ′ΔZt+ϕS∼∗t−1+∑j=1kdjΔS∼t−j+w^′tγ+ut, (3) The null of nonstationarity is based on ϕ=0 and the ordinary least square approach is utilized to generate the tests statistic. Zt is a vector that houses the exogenous variables, which is expressed as Zt=[1,t,D∗1t,…,D∗Rt,DT∗1t,…,DT∗Rt]′ . Whereas, the dummy D∗1t=1 for t ≥ TB + 1, i = 1, …, R, and 0, otherwise, and D∗1t=t−TBi for t ≥ TB + 1 and 0 otherwise. TBi capture the locations of the breakpoints and δ are the coefficients that are derived from the regression of ∆yt on ∆Zt. S∼∗t capture the transformed term of the detrended variables, S∼t=yt−Ψ∼−Ztδ,∼ . Consistent with the work of Lee et al. (2012), the transformation is needed to make the method more robust. w^t is the information on non-normal errors and its presence transform the test into a RALS framework. In the Lagrange multiplier (LM) test of Lee et al. (2012), γ = 0. The lagged terms of ΔS¯¯¯t−j are incorporated into the analysis in order to cater for the incidence of autocorrelationFootnote2. The next step is to examine the nonlinear ARDL as suggested by Shin et al. (2011)Footnote3. This test is used to reveal the asymmetric (nonlinear) relationship in the short-run and the long-run. Basically, the nonlinear ARDL is able to examine whether the positive shocks of the independent variables have the same effect as their negative shocks on the dependent variables. Contrasting earlier studies, the findings of this research reveal whether the short-run and long-run positive shocks of the independent variable are similar to the short-run and long-run negative shocks. The nonlinear ARDL models are presented as follows: lnREt=C+α1lnGDPt+α2lnOPt++α3lnOPt−+α5lnPDt+α6lnPIt+εt (4) lnREt=C+α1lnGDPt+α2lnOPt++α3lnOPt−+α5lnTRDt+α6lnPIt+εt (5) Where, t represent time; − and + symbolizes the positive and negative shocks for oil prices. εt is the error term with the assumption of normal distribution. yt=α+zt++α−zt−+εt (6) α+and α− are the long run parameter and z1 is the vector regressor which is explained as: zt=z0+zt++zt− (7) zt+and zt− are the positive and negative partial sums which is expressed below: zt+=∑i=1tΔzj+=∑ti=1max(Δzi,0) (8) zt−=∑ti=1Δzj−=∑ti=1min(Δzi,0 (9)Asymmetric error correction model (AECM) is as followsΔyt=ρyt−1+∅+z+t−1+∅−z−t−1+∑j−1i=1φjΔyt−i+∑pi=0(π+jΔz+t−i+π−iΔz−t−i)+εt(10)where, ∅+=α+ρyt−1and ∅−=α−ρyt−1. The nonlinear ARDL framework has the same procedures as the linear ARDL proposed by Pesaran et al. (2001). The estimation of Eq. (10) the null hypothesis ρ = ∅+ = ∅− = 0. Furthermore, in nonlinear ARDL, the Wald test is employed to find the long run coefficient by ∅+ = ∅− as well as the short run coefficient as μ+ = μ−. Lastly, the cumulative dynamic multiplier effects of z+ and z− on yt is presented as follows:m+k=∑ki=0∂yt+i∂zt+,m−k=∑i=0k∂yt+i∂zt−k=0,1,2,(11)where; k→∞,the m+k→α+,m−k→α−where the long run asymmetric α+ and α− is already calculated, and thus, can be used below:α+=−∅+ρ,α−=−∅−ρ(12)Empirical resultsBefore the NARDL is utilized, it is important to confirm that all the variables are not stationary at the second difference. The unit root tests results confirmed that all the variables are stationary at the first difference; therefore, the NARDL can be performed. The next step is to generate the positive and negative shocks for oil price variables; and finally, the NARDL can be performedFootnote4.The empirical outcome commenced by testing the unit root structures of the variables, which is described in Table 1. We applied the Meng et al. (2014) unit root test for our assessment; we also reported the results of Lee et al. (2012) test. The procedures suggested by Dawson and Strazicich (2010) are employed to decide on the ideal lag. When the variables are subjected to RALS test, there is evidence that the series are stationary at first difference. The results from the LM test reported in Table 2 are substantially similar to the output from the RALS test. It is noted that about 30% are located in the latter part of 2000s. This is not surprising given that the period largely corresponded with the US financial crisis, which triggered the worst form of economic recession in the US ever since the great depression of the 1930s. To conduct a robustness check for the stationarity tests, we further used two additional unit root tests provided by Kapetanios et al. (2003) and Kruse (2011) Footnote5’Footnote6. The outcomes of the two tests, which are reported in Table 2, are all stationary at first differences.Table 1 Results of the nonlinear unit root testFull size tablTable 2 LM unit root testFull size tableOnce perceiving the integration properties of the variable, we proceeded with the nonlinear ARDL test to inspect possible long-run link in the series. Therefore, the bound test for cointegration is implemented; the outcomes are revealed in Table 3. The outcomes show the F-statistics is 9.287871 for model 4 and 4.539995 for model 5, which is greater than the critical values of I0 Bound and I1 Bound at the entire levels of significance, rejecting the null hypothesis of no cointegration. Therefore, it is clear that a long-run link exists among the estimated variables in both models.Table 3 Bound testFull size tableAs cointegration is present, the short-run and long-run estimations of the nonlinear ARDL can be performed. The short-run and long-run estimation is obtained in Table 4 and 5; the short-run results reveal that the rise in oil prices will increase RE use, while the fall in oil prices will reduce the use of RE. Moreover, the GDP, population density and trade openness will increase RE consumption significantly. However, price index will decrease the RE consumption significantly.Table 4 Short run and long run nonlinear ARDL estimation (model 4)Full size tableTable 5 Short run and long run nonlinear ARDL estimation (model 5)Full size tableThe following is done to perform the long-run estimation. The results in Table 4 for model 4 were similar to the short-run outcomes as the increase in oil prices, GDP, and population increase RE use. However, the rise in price level decreases the use of RE. Moreover, the results revealed that the effect of the decrease in oil prices on RE consumption will diminish in the long run.The long run results presented in Table 5 for model 5 shows the different outcomes as increase/decrease in oil price and GDP losses their significance in the long run. Conversely, trade openness and price level have significant positive and negative effect on RE consumption in the long run. The results (based on model 4) revealed that the increase in oil prices (similar outcomes to Lin and Omoju 2017), GDP (similar results were found by Doytch and Narayan 2016; Rafindadi and Ozturk 2016; and Rafindadi and Ozturk 2016) and population density (similar outcome to Omri and Kahouli 2014; Azam et al. 2015) will have a permanent effect on increasing RE consumption in the US. On the other hand, the rise in the price level (both model 4 and 5) will reduce consumption of RE in the US (similar to Doytch and Narayan 2016). Moreover, the result for model 5 revealed that trade openness positively contributes to the increase in RE consumption in the short and long run (similar results were found by Omri and Nguyen 2014 and Omri et al. 2015). Lastly, the results show that the decrease in oil prices will affect RE consumption in the short run but its effect will diminish in the long run. Therefore, the decrease in oil price will have a permanent effect on RE consumption in the US. Moreover, to test the reliability of model 4 and 5, we have conducted the LM test for serial correlation, heteroskedasticity test as well as normality of the model. The results for the LM test revealed that the equations accept the null hypothesis of no serial correlation and the heteroskedasticity test shows that we can accept the null hypothesis of homoscedasticity. Lastly, there is evidence for normality. Therefore, the outcomes of this study are reliable.The stability of the model as well as the short-run and long-run multipliers of oil price increases and decreases have been evaluated. The results revealed that the models of this study are stable and it takes several years for the impact of both increases and decreases in the oil prices to be fully felt (Appendix 1 and 2).ConclusionThis research investigated the effect of the rise and fall in oil prices on RE in the US from 1970 through 2018. To study it systematically, a nonlinear ARDL model for RE use was established utilizing GDP, the price of crude oil, population density, and price index as independent variables.The results in general revealed that the rise in crude oil price, GDP, and population density will increase RE use in the short and long run. However, the increase in price level will reduce the RE use. Moreover, the decrease in oil prices will decrease RE use in the short run and its significant effect will eventually diminish in the long run. GDP is a clear indicator of income; and thus, the increase in GDP will eventually increase the demand for RE. Therefore, with the increase in GDP, the US will have enough resources to finance, invest, and produce more RE.The rise in population density will increase the use of RE for the US. It is evident that the use of energy for developed countries like the US is high as compared to the developing and emerging economies. As more energy consumption is required to generate economic growth, energy is anticipated to positively influence the consumption of different types of primary energy including the consumption of RE. On crude oil prices, the outcome clearly shows that the rise in oil prices will increase RE use while the fall in crude oil prices will reduce RE. These results are on expected lines as the increase in crude oil prices will encourage the country to find cheaper energy alternatives such as RE. However, the decline in oil prices will reduce the use of RE as oil becomes a cheaper alternative to RE.

#### Rising oil prices lead to increased renewable energy consumption

**Oxford Business Group 22** [Oxford Business Group, "What impact will the rise in oil prices have on the energy transition?," <https://oxfordbusinessgroup.com/articles-interviews/what-impact-will-the-rise-in-oil-prices-have-on-the-energy-transition>, 2/16/22] TDI

Amid an increase in global demand and concerns over key supplies, global oil prices are approaching $100 per barrel for the first time since 2014. But, with prices rising, what does this mean for the renewable energy transition, especially in Gulf countries?

After opening the year at around $78 per barrel, Brent crude prices rose sharply over the first six weeks of 2022 to surpass $94 as of February 14, the highest price in more than seven years.

Driven primarily by a lack of supply and a recent post-lockdown spike in global demand, the increase caps off a dramatic recovery of prices, which had fallen to less than $20 a barrel in April 2020.

Given the low oil price environment of the last couple of years, the recent increase has prompted discussion about the implications for investment in renewable energy, particularly for oil-exporting countries in the Gulf.

Although investment in oil and gas has fallen by about 30% since the outbreak of the pandemic, there are signs that the increased demand and rise in prices could lead to a reversal of that trend.

Carbon Tracker, a London-based climate change-focused think tank, noted last month that higher oil prices might encourage energy companies to invest in new exploration and production projects.

Indeed, on February 1 energy giant ExxonMobil announced a 45% increase in its budget for drilling and other activities this year, while a day later members of the Organisation of the Petroleum Exporting Countries and other leading oil-producing nations – an alliance known as OPEC+ – agreed to stick with their pre-planned target of increasing oil production by 400,000 barrels per day.

At the same time, there are concerns that higher oil prices could incentivise the consumption of coal, which reached an all-time high in 2021 and is on track to reach even higher levels this year, according to the International Energy Agency.

In addition to its lower price, coal use is being driven by rising energy demand – led by China and India – and insufficient levels of investment in renewables.

A boon for renewables?

Although high oil prices have the potential to incentivise new investment in oil and gas projects, renewables could ultimately benefit from the current situation.

Rather than directly challenging renewables and slowing the energy transition, many energy industry analysts believe that the current high prices – and the associated financial windfall – could lead governments and oil majors to play the long game and further increase their investments in renewable energy.

For example, in September last year French energy giant Total said it would take advantage of high oil prices to buy back $1.5bn in shares to boost investment in renewable energy, while earlier this month BP – upon announcing its highest annual profit in eight years, at $12.8bn – stated it would increase spending on low-carbon energy to 40% of total spending by 2025 and 50% by 2030.

Gulf pushing ahead with renewables

A prime example of an oil-producing region that has recently reaffirmed its commitment to renewables is the Gulf.

Indeed, many Middle Eastern countries have identified the development of renewable energy as key to their long-term economic diversification plans.

For example, Saudi Arabia aims to generate 50% of its electricity from renewables by 2030 and has set a net-zero target of 2060.

To help achieve these goals, in December the government announced that it would invest SR380bn ($101.3bn) in renewable energy production by the end of the decade, while in April last year it inaugurated the Sakaka solar power plant, the country’s first utility-scale renewables project.

Meanwhile, in October the UAE pledged to invest Dh600bn ($163.4bn) in renewables by 2050, at which point it hopes to achieve net-zero emissions.

The announcement came just a few weeks after the inauguration of the first stage of the Mohammed bin Rashid Al Maktoum Solar Park in Dubai. The park is expected to have a capacity of 5 GW by 2030.

Elsewhere in the region, in late January Oman inaugurated the 500-MW Ibri 2 solar field, the country’s largest utility-scale renewables project, while Qatar, one of the world’s largest exporters of natural gas, has also increased its focus on renewables.

In October last year Qatar Petroleum, the national energy company, changed its name to Qatar Energy, in order to better reflect the company’s renewables-focused strategy.

Major projects include the 800-MW Al Kharsaah Solar plant, located approximately 80 km west of the capital Doha.

Once fully completed, the project will be the country’s largest renewable energy development. It is set to be inaugurated in the first half of this year.

While there is some scepticism as to exactly how much of the financial windfall associated with high oil prices will go towards the energy transition, and whether net-zero ambitions can be achieved if funds continue to be channelled into new exploration and production projects, it is clear that renewables are playing an increasingly important role in the long-term energy plans of companies and governments alike.

### impact—climate change

#### Renewables are key to fighting climate change

Long 16 [(Noah Long has worked to advance policies for deploying renewable energy, increasing energy efficiency, and advancing cleaner cars and electric vehicles. He initiated a successful campaign to protect Chile’s Patagonia from damages associated with large-scale hydrological development. Currently, Long co-directs NRDC’s western clean energy and climate policy initiatives with Peter Miller. He holds a bachelor’s degree from Bowdoin College, a master's in international development and environmental policy from the London School of Economics, and a J.D. from Stanford Law School.), “Renewable Energy Is Key to Fighting Climate Change”, Natural Resources Defense Council, <https://www.nrdc.org/bio/noah-long/renewable-energy-key-fighting-climate-change>, 7/26/16] TDI

**Renewable energy is one of the most effective tools we have in the fight against climate change**, and there is every reason to believe it will succeed. A recent New York Times column seems to imply that renewable energy investments set back efforts to address climate change—nothing could be further from the truth. What’s more, renewable technologies can increasingly save customers money as they displace emissions from fossil fuels.

Wind and solar energy have experienced remarkable growth and huge cost improvements over the past decade with no signs of slowing down. Prices are declining rapidly, and renewable energy is becoming increasingly competitive with fossil fuels all around the country. In some places, new renewable energy is already cheaper than continuing to operate old, inefficient and dirty fossil fuel-fired or nuclear power plants.

In fact, the investment firm Lazard estimates that the cost of generating electricity from wind and solar has declined by 58 percent and 78 percent, respectively, since 2009. Those cost trends are expected to continue, and coupled with the recent extension of federal tax credits for renewable energy, wind and solar growth is widely expected to accelerate over the next several years, with capacity projected to double from 2015 levels by 2021. With careful planning, renewable energy and clean energy options like increased energy efficiency and storing energy for use later will help pave the way.

In the longer term, the U.S. Environmental Protection Agency’s Clean Power Plan to establish the first national limits on carbon pollution from power plants will continue to drive renewable energy growth. Wind and solar energy will play a central role in achieving the emissions cuts required, and carbon policies like the Clean Power Plan will be critical to ensuring that low-carbon resources are prioritized over higher-emitting power plants.

The benefits are huge

In addition to the climate benefits that they will help deliver, renewables already provide a wide range of market and public health benefits that far outweigh their costs. A recent report from the Department of Energy and Lawrence Berkeley National (LBNL) Laboratory found that renewable portfolio standards—state policies that mandate that a specific amount of the state’s electricity comes from renewables—provide a wide range of economic, health, and climate benefits. The report concluded that in 2013 alone, renewable standards across the country saved customers up to $1.2 billion from reduced wholesale electric prices and $1.3 billion to $3.7 billion from lower natural gas prices (as a result of lower demand for natural gas across the power sector).

The non-market benefits of renewable energy also are considerable. The LBNL researchers estimated that renewables supported nearly 200,000 jobs, provided $5.2 billion worth of health benefits through improved air quality, and resulted in global climate benefits of $2.2 billion. At the same time, according to a separate report by DBL Investors, the top 10 leading renewable states experienced lower electricity price increases than the bottom 10 states between 2002 and 2013.

The United States must continue—and accelerate—its clean energy growth and the transition to a low-carbon electric grid. There will be technical challenges to completing this transformation, but study after study concludes that integrating high levels of renewables into our electric grid is achievable. This is also being demonstrated in practice, as many states are already incorporating wind and solar, including in Texas, where wind has now supplied over 45 percent of the state’s total energy demand on multiple occasions, and in Iowa, as the state now generates 31 percent of its total annual power from wind.

Change is here

Much is said about the need to adapt the electric grid to the variability associated with integrating renewable energy into our electricity mix. Until recently, the huge costs of maintaining back-up generation and transmission in case they’re needed to keep the lights on when large, inflexible resources like coal and nuclear plants suddenly and unexpectedly go offline has too often been ignored. Grid managers and planners are now appropriately as concerned about the need for flexibility and predictability, assets that large fossil and nuclear plants lack. Renewable energy production is variable, but predictable (we mostly know when it will be sunny or windy). However, it can be impossible to predict when large fossil or nuclear plant will have to shut down for critical maintenance.

In a sign of the declining status of large, inflexible base load resources, PG&E recently announced it will close the Diablo Canyon nuclear plant in California and replace it with 100 percent clean energy (NRDC is a signatory), PG&E explains: “California’s electric grid is in the midst of a significant shift that creates challenges for the facility in the coming decades. Changes in state policies, the electric generation fleet, and market conditions combine to reduce the need for large, inflexible baseload power plants.”

As we move forward, there are a number of grid planning practices and technologies that will help facilitate America’s transition to higher and higher amounts of renewable energy. For example, as more and more cars on the road become electric, those vehicles can help store electricity and manage peak demand so that supply and demand can be better aligned. Demand response (compensating customers for altering their electricity use at specific periods) and time of use electricity pricing can provide similar support. Leading states are currently contemplating how to design policies and market structures that support a modernized, low-carbon grid. Planning for the future can and must be done in parallel with promoting strong renewables growth in the present.

Renewable energy is already helping address climate change. It’s time to put our feet on the accelerator.

#### Climate change causes extinction

Carrington 22 [(Amazon rainforest-based journalist and author. Global environment writer for The Guardian) “Climate endgame: risk of human extinction ‘dangerously underexplored’,” <https://www.theguardian.com/environment/2022/aug/01/climate-endgame-risk-human-extinction-scientists-global-heating-catastrophe>, 8/1/22]

The risk of global societal collapse or human extinction has been “dangerously underexplored”, climate scientists have warned in an analysis.

They call such a catastrophe the “climate endgame”. Though it had a small chance of occurring, given the uncertainties in future emissions and the climate system, cataclysmic scenarios could not be ruled out, they said.

“Facing a future of accelerating climate change while blind to worst-case scenarios is naive risk management at best and fatally foolish at worst,” the scientists said, adding that there were “ample reasons” to suspect global heating could result in an apocalyptic disaster.

The international team of experts argue the world needs to start preparing for the possibility of the climate endgame. “Analysing the mechanisms for these extreme consequences could help galvanise action, improve resilience, and inform policy,” they said.

Explorations in the 1980s of the nuclear winter that would follow a nuclear war spurred public concern and disarmament efforts, the researchers said. The analysis proposes a research agenda, including what they call the “four horsemen” of the climate endgame: famine, extreme weather, war and disease.

They also called for the Intergovernmental Panel on Climate Change to produce a special report on the issue. The IPCC report on the impacts of just 1.5C of heating drove a “groundswell of public concern”, they said.

“There are plenty of reasons to believe climate change could become catastrophic, even at modest levels of warming,” said Dr Luke Kemp at the University of Cambridge’s Centre for the Study of Existential Risk, who led the analysis. “Climate change has played a role in every mass extinction event. It has helped fell empires and shaped history.

“Paths to disaster are not limited to the direct impacts of high temperatures, such as extreme weather events. Knock-on effects such as financial crises, conflict and new disease outbreaks could trigger other calamities.”

The analysis is published in the journal Proceedings of the National Academy of Sciences and was reviewed by a dozen scientists. It argues that the consequences of global heating beyond 3C have been underexamined, with few quantitative estimates of the total impacts. “We know least about the scenarios that matter most,” Kemp said.

A thorough risk assessment would consider how risks spread, interacted and amplified, but had not been attempted, the scientists said. “Yet this is how risk unfolds in the real world,” they said. “For example, a cyclone destroys electrical infrastructure, leaving a population vulnerable to an ensuing deadly heatwave.” The Covid pandemic underlined the need to examine rare but high-impact global risks, they added.

Particularly concerning are tipping points, where a small rise in global temperature results in a big change in the climate, such as huge carbon emissions from an Amazon rainforest suffering major droughts and fires. Tipping points could trigger others in a cascade and some remained little studied, they said, such as the abrupt loss of stratocumulus cloud decks that could cause an additional 8C of global warming.

The researchers warn that climate breakdown could exacerbate or trigger other catastrophic risks, such as international wars or infectious disease pandemics, and worsen existing vulnerabilities such as poverty, crop failures and lack of water. The analysis suggests superpowers may one day fight over geoengineering plans to reflect sunlight or the right to emit carbon.

**Warming causes extinction**

**Ramanathan et al. 17** [Veerabhadran Ramanathan is Victor Alderson Professor of Applied Ocean Sciences and director of the Center for Atmospheric Sciences at the Scripps Institution of Oceanography, University of California, San Diego, Dr. William Collins is an internationally recognized expert in climate modeling and climate change science. He is the Director of the Climate and Ecosystem Sciences Division (CESD) for the Earth and Environmental Sciences Area (EESA) at the Lawrence Berkeley National Laboratory (LBNL), Prof. Dr Mark Lawrence, Ph.D. is scientific director at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Örjan Gustafsson is a Professor in the Department of Environmental Science and Analytic Chemistry at Stockholm University, Shichang Kang is Professor, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences (CAS); CAS Center for Excellence in Tibetan Plateau Earth Sciences, and Molina, M.J., Zaelke, D., Borgford-Parnell, N., Xu, Y., Alex, K., Auffhammer, M., Bledsoe, P., Croes, B., Forman, F., Haines, A., Harnish, R., Jacobson, M.Z., Lawrence, M., Leloup, D., Lenton, T., Morehouse, T., Munk, W., Picolotti, R., Prather, K., Raga, G., Rignot, E., Shindell, D., Singh, A.K., Steiner, A., Thiemens, M., Titley, D.W., Tucker, M.E., Tripathi, S., & Victor, D., authors come from the following 9 countries - US, Switzerland, Sweden, UK, China, Germany, Australia, Mexico, India, “Well Under 2 Degrees Celsius: Fast Action Policies to Protect People and the Planet from Extreme Climate Change,” Report of the Committee to Prevent Extreme Climate Change, September 2017, http://www.igsd.org/wp-content/uploads/2017/09/Well-Under-2-Degrees-Celsius-Report-2017.pdf] TDI

Climate change is becoming an existential threat **with warming in excess of 2°C within the next three decades and 4°C to 6°C within the next several decades. Warming of such magnitudes will expose as many as** 75% of the world’s population to deadly heat stress **in addition to disrupting the climate and weather worldwide. Climate change is an urgent problem requiring urgent solutions**. This paper lays out urgent and **practical solutions that are ready for implementation now, will deliver benefits in the next few critical decades**, and places the world on a path to achieving the longterm targets of the Paris Agreement and near-term sustainable development goals. The approach consists of four building blocks and 3 levers to implement ten scalable solutions described in this report by a team of climate scientists, policy makers, social and behavioral scientists, political scientists, legal experts, diplomats, and military experts from around the world. These solutions will enable society to decarbonize the global energy system by 2050 through efficiency and renewables, drastically reduce short-lived climate pollutants, and stabilize the climate well below 2°C both in the near term (before 2050) and in the long term (post 2050). It will also reduce premature mortalities by tens of millions by 2050. As an insurance against policy lapses, mitigation delays and faster than projected climate changes, the solutions include an Atmospheric Carbon Extraction lever to remove CO2 from the air. The amount of CO2 that must be removed ranges from negligible, if the emissions of CO2 from the energy system and SLCPs start to decrease by 2020 and carbon neutrality is achieved by 2050, to a staggering one trillion tons if the carbon lever is not pulled and emissions of climate pollutants continue to increase until 2030.

There are numerous living laboratories including 53 cities, many universities around the world, the state of California, and the nation of Sweden, who have embarked on a carbon neutral pathway. These laboratories have already created 8 million jobs in the clean energy industry; they have also shown that **emissions of greenhouse gases and air pollutants can be** decoupled from economic growth. Another favorable sign is that **growth rates of worldwide carbon emissions have reduced from 2.9% per year during the first decade of this century to 1.3% from 2011 to 2014 and near zero growth rates during the last few years. The carbon emission curve is bending, but we have a long way to go and very little time for achieving carbon neutrality**. We need institutions and enterprises that can accelerate this bending by scaling-up the solutions that are being proven in the living laboratories. We have less than a decade to put these solutions in place around the world to preserve nature and our quality of life for generations to come. The time is now.

The Paris Agreement is an historic achievement. For the first time, effectively all nations have committed to limiting their greenhouse gas emissions and taking other actions to limit global temperature change. Specifically, 197 nations agreed to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels,” and achieve carbon neutrality in the second half of this century.

**The climate has already warmed by 1°C. The problem is running ahead of us, and under current trends we will likely reach 1.5°C in the next fifteen years and surpass the** 2°C guardrail by mid-century **with a 50% probability of reaching 4°C by end of century**. Warming in excess of 3°C is likely to be a global catastrophe for three major reasons:

• **Warming in the range of 3°C to 5°C is suggested as the threshold for several tipping points in the physical and geochemical systems; a warming of about 3°C has a probability of over 40% to cross over multiple** tipping points**, while a warming close to 5°C increases it to nearly 90%, compared with a baseline warming of less than 1.5°C, which has only just over a 10% probability of exceeding any tipping point.**

**• Health effects of such warming are emerging as a major if not dominant source of concern. Warming of 4°C or more will expose more than 70% of the population, i.e. about 7 billion by the end of the century, to deadly heat stress and expose about 2.4 billion to vector borne diseases such as Dengue, Chikengunya, and Zika virus among others**. Ecologists and paleontologists have proposed that warming in excess of 3°C, accompanied by increased acidity of the oceans by the buildup of CO2 , can become a major causal factor for exposing more than 50% of all species to extinction. 20% of species are in danger of extinction now due to population, habitat destruction, and climate change.

The good news is that **there may still be time to avert such catastrophic changes**. The Paris Agreement and **supporting climate policies must be strengthened substantially within the next five years to bend the emissions curve down faster, stabilize climate, and prevent catastrophic warming**. To the extent those efforts fall short, societies and **ecosystems will be forced to contend with substantial needs for adaptation—a burden that will fall disproportionately on the poorest three billion who are least responsible for causing the climate change problem.**

Here we propose a policy roadmap with a realistic and reasonable chance of limiting global temperature to safe levels and preventing unmanageable climate change—an outline of specific science-based policy pathways that serve as the building blocks for a three-lever strategy that could limit warming to well under 2°C. The projections and the emission pathways proposed in this summary are based on a combination of published recommendations and new model simulations conducted by the authors of this study (see Figure 2). We have framed the plan in terms of four building blocks and three levers, which are implemented through 10 solutions. The first building block would be fully implementing the nationally determined mitigation pledges under the Paris Agreement of the UN Framework Convention on Climate Change (UNFCCC). In addition, several sister agreements that provide targeted and efficient mitigation must be strengthened. Sister agreements include the Kigali Amendment to the Montreal Protocol to phase down HFCs, efforts to address aviation emissions through the International Civil Aviation Organization (ICAO), maritime black carbon emissions through the International Maritime Organization (IMO), and the commitment by the eight countries of the Arctic Council to reduce black carbon emissions by up to 33%. There are many other complementary processes that have drawn attention to specific actions on climate change, such as the Group of 20 (G20), which has emphasized reform of fossil fuel subsidies, and the Climate and Clean Air Coalition (CCAC). HFC measures, for example, can avoid as much as 0.5°C of warming by 2100 through the mandatory global phasedown of HFC refrigerants within the next few decades, and substantially more through parallel efforts to improve energy efficiency of air conditioners and other cooling equipment potentially doubling this climate benefit.

For the second building block, numerous subnational and city scale climate action plans have to be scaled up. One prominent example is California’s Under 2 Coalition signed by over 177 jurisdictions from 37 countries in six continents covering a third of world economy. The goal of this Memorandum of Understanding is to catalyze efforts in many jurisdictions that are comparable with California’s target of 40% reductions in CO2 emissions by 2030 and 80% reductions by 2050—emission cuts that, if achieved globally, would be consistent with stopping warming at about 2°C above pre-industrial levels. Another prominent example is the climate action plans by over 52 cities and 65 businesses around the world aiming to cut emissions by 30% by 2030 and 80% to 100% by 2050. There are concerns that the carbon neutral goal will hinder economic progress; however, real world examples from California and Sweden since 2005 offer evidence that economic growth can be decoupled from carbon emissions and the data for CO2 emissions and GDP reveal that growth in fact prospers with a green economy.

The third building block consists of two levers that we need to pull as hard as we can: one for drastically reducing emissions of short-lived climate pollutants (SLCPs) beginning now and completing by 2030, and the other for decarbonizing the global energy system by 2050 through efficiency and renewables. Pulling both levers simultaneously can keep global temperature rise below 2°C through the end of the century. If we bend the CO2 emissions curve through decarbonization of the energy system such that global emissions peak in 2020 and decrease steadily thereafter until reaching zero in 2050, there is less than a 20% probability of exceeding 2°C. This call for bending the CO2 curve by 2020 is one key way in which this report’s proposal differs from the Paris Agreement and it is perhaps the most difficult task of all those envisioned here. Many cities and jurisdictions are already on this pathway, thus demonstrating its scalability. Achieving carbon neutrality and reducing emissions of SLCPs would also drastically reduce air pollution globally, including all major cities, thus saving millions of lives and over 100 million tons of crops lost to air pollution each year. In addition, these steps would provide clean energy access to the world’s poorest three billion who are still forced to resort to 18th century technologies to meet basic needs such as cooking. For the fourth and the final building block, we are adding a third lever, ACE (Atmospheric Carbon Extraction, also known as Carbon Dioxide Removal, or “CDR”). This lever is added as an insurance against surprises (due to policy lapses, mitigation delays, or non-linear climate changes) and would require development of scalable measures for removing the CO2 already in the atmosphere. The amount of CO2 that must be removed will range from negligible, if the emissions of CO2 from the energy system and SLCPs start to decrease by 2020 and carbon neutrality is achieved by 2050, to a staggering one trillion tons, if CO2 emissions continue to increase until 2030, and the carbon lever is not pulled until after 2030. This issue is raised because the NDCs (Nationally Determined Contributions) accompanying the Paris Agreement would allow CO2 emissions to increase until 2030. We call on economists and experts in political and administrative systems to assess the feasibility and cost-effectiveness of reducing carbon and SLCPs emissions beginning in 2020 compared with delaying it by ten years and then being forced to pull the third lever to extract one trillion tons of CO2

The fast mitigation plan of requiring emissions reductions to begin by 2020, which means that many countries need to cut now, is urgently needed to limit the warming to well under 2°C. Climate change is not a linear problem. Instead, we are facing non-linear climate tipping points that can lead to self-reinforcing and cascading climate change impacts. Tipping points and selfreinforcing feedbacks are wild cards that are more likely with increased temperatures, and many of the potential abrupt climate shifts could happen as warming goes from 1.5°C in 15 years to 2°C by 2050, with the potential to push us well beyond the Paris Agreement goals.

Where Do We Go from Here?

**A massive effort will be needed to stop warming at 2°C, and time is of the essence. With unchecked business-as-usual emissions, global warming has a 50% likelihood of exceeding 4ºC and a 5% probability of exceeding 6ºC in this century, raising existential questions for most, but especially the poorest three billion people. A 4ºC warming is likely to expose as many as 75% of the global population to deadly heat.** Dangerous to catastrophic impacts on the health of people including generations yet to be born, on the health of ecosystems, and on species extinction have emerged as major justifications for mitigating climate change well below 2ºC, although we must recognize that the uncertainties intrinsic in climate and social systems make it hard to pin down exactly the level of warming that will trigger possibly catastrophic impacts. To avoid these consequences, we must act now, and we must act fast and effectively. This report sets out a specific plan for reducing climate change in both the near- and long-term. With aggressive urgent actions, we can protect ourselves. Acting quickly to prevent catastrophic climate change by decarbonization will save millions of lives, trillions of dollars in economic costs, and massive suffering and dislocation to people around the world. This is a global security imperative, as it can avoid the migration and destabilization of entire societies and countries and reduce the likelihood of environmentally driven civil wars and other conflicts.

Staying well under 2°C will require a concerted global effort. We must address everything from our energy systems to our personal choices to reduce emissions to the greatest extent possible. We must redouble our efforts to invent, test, and perfect systems of governance so that the large measure of international cooperation needed to achieve these goals can be realized in practice. The health of people for generations to come and the health of ecosystems crucially depend on an energy revolution beginning now that will take us away from fossil fuels and toward the clean renewable energy sources of the future. It will be nearly impossible to obtain other critical social goals, including for example the UN agenda 2030 with the Sustainable Development Goals, if we do not make immediate and profound progress stabilizing climate, as we are outlining here.

1. The Building Blocks Approach The 2015 Paris Agreement, which went into effect November 2016, is a remarkable, historic achievement. For the frst time, essentially all nations have committed to limit their greenhouse gas emissions and take other actions to limit global temperature and adapt to unavoidable climate change. Nations agreed to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels” and “achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century” (UNFCCC, 2015). Nevertheless, the initial Paris Agreement has to be strengthened substantially within fve years if we are to prevent catastrophic warming; **current pledges place the world on track for up to 3.4°C by 2100 (UNEP, 2016b). Until now, no specifc policy roadmap exists that provides a realistic and reasonable chance of limiting global temperatures to safe levels and preventing unmanageable climate change**. This report is our attempt to provide such a plan— an outline of specifc solutions that serve as the building blocks for a comprehensive strategy for limiting the warming to well under 2°C and avoiding dangerous climate change (Figure 1). The frst building block is the full implementation of the nationally determined mitigation pledges under the Paris Agreement of the UN Framework Convention on Climate Change (UNFCCC) and strengthening global sister agreements, such as the Kigali Amendment to the Montreal Protocol to phase down HFCs, which can provide additional targeted, fast action mitigation at scale. For the second building block, numerous sub-national and city scale climate action plans have to be scaled up such as California’s Under 2 Coalition signed by 177 jurisdictions from 37 countries on six continents. The third building block is targeted measures to reduce emissions of shortlived climate pollutants (SLCPs), beginning now and fully implemented by 2030, along with major measures to fully decarbonize the global economy, causing the overall emissions growth rate to stop in 2020-2030 and reach carbon neutrality by 2050. Such a deep decarbonization would require an energy revolution similar to the Industrial Revolution that was based on fossil fuels. The fnal building block includes scalable and reversible carbon dioxide (CO2 ) removal measures, which can begin removing CO2 already emitted into the atmosphere. Such a plan is urgently needed. Climate change is not a linear problem. Instead, climate tipping points can lead to self-reinforcing, cascading climate change impacts (Lenton et al., 2008). Tipping points are more likely with increased temperatures, and many of the potential abrupt climate shifts could happen as warming goes from 1.5°C to 2°C, with the potential to push us well beyond the Paris Agreement goals (Drijfhout et al., 2015). In order to avoid dangerous climate change, we must address these concerns. **We must act now, and we must act fast. Reduction of SLCPs will result in fast, near-term reductions in warming, while present-day reductions of CO2 will result in long-term climate benefts**. This two-lever approach—aggressively cutting both SLCPs and CO2 –-will slow warming in the coming decades when it is most crucial to avoid impacts from climate change as well as maintain a safe climate many decades from now. To achieve the nearterm goals, we have outlined solutions to be implemented immediately. These solutions to bend down the rising emissions curve and thus bend the warming trajectory curve follow a 2015 assessment by the University of California under its Carbon Neutrality Initiative (Ramanathan et al., 2016). The solutions are clustered into categories of social transformation, governance improvement, market- and regulation-based solutions, technological innovation and transformation, and natural and ecosystem management. Additionally, we need to intensely investigate and pursue a third lever—ACE (Atmospheric Carbon Extraction). While many potential technologies exist, we do not know the extent to which they could be scaled up to remove the requisite amount of carbon from the atmosphere in order to achieve the Paris Agreement goals, and any delay in mitigation will demand increasing reliance on these technologies. Yet, there is still hope. Humanity can come together, as we have done in the past, to collaborate towards a common goal. We have no choice but to tackle the challenge of climate change. We only have the choice of when and how: **either now, through the ambitious plan outlined here, or later, through radical adaptation and societal transformations in response to an ever-deteriorating climate system that will unleash devastating impacts—some of which may be beyond our capacity to fully adapt to or reverse for thousands of years.**

2. Major Climate Disruptions: How Soon and How Fast? “Without adequate mitigation and adaptation, climate change poses unacceptable risks to global public health.” (WHO, 2016)

The planet has already witnessed nearly 1°C of warming, and another 0.6°C of additional warming is currently stored in the ocean to be released over the next two to four decades, if climate warming emissions are not radically reduced during that time (IPCC, 2013). The impacts of this warming on extreme weather, droughts, and foods are being felt by society worldwide to the extent that many think of this no longer as climate change but as climate disruption. Consider the business as usual scenario:

15 years from now: In 15 years, planetary warming will reach 1.5°C above pre-industrial global mean temperature (Ramanathan and Xu, 2010; Shindell et al., 2012). This exceeds the 0.5°C to 1°C of warming during the Eemian period, 115,000– 130,000 years ago, when sea-levels reached 6-9 meters (20-30 feet) higher than today (Hansen et al., 2016b). The impacts of this warming will affect us all yet will disproportionately affect the Earth’s poorest three billion people, who are primarily subsistence farmers that still rely on 18th century technologies and have the least capacity to adapt (IPCC, 2014a; Dasgupta et al., 2015). They thus may be forced to resort to mass migration into city slums and push across international borders (U.S. DOD, 2015). The existential fate of lowlying small islands and coastal communities will also need to be addressed, as they are primarily vulnerable to sea-level rise, diminishing freshwater resources, and more intense storms. In addition, many depend on fsheries for protein, and these are likely to be affected by ocean acidifcation and climate change. Climate injustice could start causing visible regional and international conficts. All of this will be exacerbated as the risk of passing tipping points increases (Lenton et al., 2008).

30 years from now: By mid-century, warming is expected to exceed 2°C, which would be unprecedented with respect to historical records of at least the last one million years (IPCC, 2014c). Such a warming through this century could result in sea-level rise of as much as 2 meters by 2100, with greater sea-level rise to follow. A group of tipping points are clustered between 1.5°C and 2°C (Figure 2) (Drijfhout et al., 2015). The melting of most mountain glaciers, including those in the Tibetan-Himalayas, combined with mega-droughts, heat waves, storms, and foods, would adversely affect nearly everyone on the planet.

80 years from now: In 80 years, warming is expected to exceed 4°C, increasing the likelihood of irreversible and catastrophic change (World Bank, 2013b). 4ºC warming is likely to expose as much as 75% of the global population to deadly heat (Mora et al., 2017). The 2°C and 4°C values quoted above and in other reports, however, are merely the central values with a 50% probability of occurrence (Ramanathan and Feng, 2008). There is a 5% probability the warming could be as high as 6°C due to uncertainties in the magnitude of amplifying feedbacks (see Section 4). This in turn could lead to major disruptions to natural and social systems, threatening food security, water security, and national security and fundamentally affecting the great majority of the projected 11.2 billion inhabitants of the planet in 2100 (UN DESA, 2015).

3. What Are the Wild Cards for Climate Disruption? Increasing the concentrations of greenhouse gases in the atmosphere increases radiative forcing (the difference between the amount of energy entering the atmosphere and leaving) and thus increases the global temperature (IPCC, 2013). However, climate wild cards exist that can alter the linear connection with warming and anthropogenic emissions by triggering abrupt changes in the climate (Lenton et al., 2008). Some of these wild cards have not been thoroughly captured by the models that policymakers rely on the most. These abrupt shifts are irreversible on a human time scale (<100 years) and will create a notable disruption to the climate system, condemning the world to warming beyond that which we have previously projected. These climate disruptions would divert resources from needed mitigation and upset mitigation strategies that we have already put in place.

1. Unmasking Aerosol Cooling: The frst such wild card is the unmasking of an estimated 0.7°C (with an uncertainty range of 0.3°C to 1.2°C) of the warming in addition to mitigating other aerosol effects such as disrupting rainfall patterns, by reducing emissions of aerosols such as sulfates and nitrates as part of air pollution regulations (Wigley, 1991; Ramanathan and Feng, 2008). Aerosol air pollution is a major health hazard with massive costs to public health and society, including contributing to about 7 million deaths (from household and ambient exposure) each year (WHO, 2014). While some aerosols, such as black carbon and brown carbon, strongly absorb sunlight and warm the climate, others refect sunlight back into space, which cools the climate (Ramanathan and Carmichael, 2008). The net impact of all manmade aerosols is negative, meaning that about 30% of the warming from greenhouse gases is being masked by co-emitted air pollution particles (Ramanathan and Carmichael, 2008). As we reduce greenhouse gas emissions and implement policies to eliminate air pollution, we are also reducing the concentration of aerosols in the air. Aerosols last in the atmosphere for about a week, so if we eliminate air pollution without reducing emissions of the greenhouse gases, the unmasking alone would lead to an estimated 0.7°C of warming within a matter of decades (Ramanathan and Feng, 2008). We must eliminate all aerosol emissions due to their health effects, but we must simultaneously mitigate emissions of CO2 , other greenhouse gases, and black carbon and co-pollutants to avoid an abrupt and very large jump in the near-term warming beyond 2°C (Brasseur and Roeckner, 2005).

2. Tipping Points**: It is likely that as we cross the 1.5°C to** 2°C thresholds **we will trigger so called** “tipping points” **for abrupt and** nonlinear changes **in the climate system with** catastrophic consequences for humanity and the environment (Lenton, 2008; Drijfhout et al., 2015). Once the tipping points are passed, the resulting impacts will range in timescales from: disruption of monsoon systems (transition in a year), loss of sea ice (approximately a decade for transition), dieback of major forests (nearly half a century for transition), reorganization of ocean circulation (approximately a century for transition), to loss of ice sheets and subsequent sea-level rise (transition over hundreds of years) (Lenton et al., 2008). Regardless of timescale, once underway many of these changes would be irreversible (Lontzek et al., 2015). There is also a likelihood of crossing over multiple tipping points simultaneously. Warming of close to 3°C would subject the system to a 46% probability of crossing multiple tipping points, while warming of close to 5°C would increase the risk to 87% (Cai et al., 2016). Recent modeling work shows a “cluster” of these tipping points could be triggered between 1.5°C and 2°C warming (Figure 2), including melting of land and sea ice and changes in highlatitude ocean circulation (deep convection) (Drijfhout et al., 2015). This is consistent with existing observations and understanding that the polar regions are particularly sensitive to global warming and have several potentially imminent tipping points. The Arctic is warming nearly twice as quickly as the global average, which makes the abrupt changes in the Arctic more likely at a lower level of global warming (IPCC, 2013). Similarly, the Himalayas are warming at roughly the same rate as the Arctic and are thus also more susceptible to incremental changes in temperature (UNEP-WMO, 2011). This gives further justifcation for limiting warming to no more than 1.5°C.

While all climate tipping points have the potential to rapidly destabilize climate, social, and economic systems, some are also **self-amplifying feedbacks that once set in motion increase warming in such a way that they perpetuate yet even more warming. Declining Arctic sea ice, thawing permafrost, and the poleward migration of cloud systems are all examples of self-amplifying feedback mechanisms, where initial warming feeds upon itself to cause still more warming acting as a force multiplier (Schuur et al., 2015).**

## Iran

### first-strike—1nc

#### Israel first-strike is the only way to deter Iran’s nuclear program and prevent an arms race. Leaked intelligence report proves US supports the strike

Klippenstein 5/24 [(Ken Klippenstein is a D.C.-based investigative reporter who focuses on national security. He is also an avid Freedom of Information Act requester. Prior to joining The Intercept, he was The Nation’s D.C. correspondent.) ‘LEAKED REPORT: “CIA DOES NOT KNOW” IF ISRAEL PLANS TO BOMB IRAN’, The Intercept, <https://theintercept.com/2023/05/24/cia-israel-iran-strike-leaked-documents/>, 5/24/23] TDI

WHETHER **ISRAEL’S ESCALATING threats of war with Iran over its nuclear program** are saber-rattling or something more serious is a mystery even to the CIA, according to a portion of a top-secret intelligence report leaked on the platform Discord earlier this year. The uncertainty about the intentions of one of the U.S.’s closest allies calls into question the basis of the “ironclad” support for Israel publicly espoused by the Biden administration.

The report — which was first covered by the Israeli channel i24 News and subsequently posted by DDoSecrets, a group that publishes leaked documents — **reveals an undisclosed military exercise conducted by Israel**. “On 20 February, Israel conducted a large-scale air exercise,” the intelligence report, produced by the Office of the Director of National Intelligence on February 23, states. The **exercise, it says, was “probably to simulate a strike on Iran’s nuclear program** and possibly to demonstrate Jerusalem’s resolve to act against Tehran.” There have been several joint U.S.-Israeli military exercises in recent months, including one proudly billed by the Pentagon as the largest “in history.”

“CIA does not know Israel’s near term plans and intentions,” the report adds, speculating that “**Netanyahu probably calculates Israel will need to strike Iran to deter its nuclear program and faces a declining military capability to set back Iran’s enrichment program.**”

That the U.S.’s premier intelligence service indicated it had no idea how seriously to take Israel’s increasingly bombastic threats to Tehran means that, in all likelihood, neither does the White House. But despite this lack of clarity, **Biden has not opposed a unilateral Israeli attack on Iran** — and his national security adviser recently hinted at **blessing it**.

“We have made clear to Iran that it can never be permitted to obtain a nuclear weapon,” Jake Sullivan said in a speech earlier this month, reiterating the administration’s oft-repeated line. The rhetoric reflects what military planners call “strategic ambiguity,” a policy of intentional uncertainty in order to deter an adversary — in this case, around how far the U.S. might go to prevent Iran from obtaining a nuclear weapon. But Sullivan went a step further, adding, “As President Biden has repeatedly reaffirmed, he will take the actions that are necessary to stand by this statement, including by recognizing Israel’s freedom of action.”

Sullivan’s statement represents the strongest signal yet that the administration would not oppose unilateral action by Israel. The rhetoric has also been echoed by other administration officials. In February, the U.S. ambassador to Israel, Tom Nides, said that “Israel can and should do whatever they need to deal with [Iran] and we’ve got their back.”

“I believe the administration is playing with fire with this kind of rhetoric and with the joint military planning.”

“In the current context this constitutes glibness,” said Paul Pillar, a retired national intelligence officer for the near east, of Sullivan’s statement. Pillar is now a senior fellow at Georgetown’s Center for Security Studies. “I believe the administration is playing with fire with this kind of rhetoric and with the joint military planning.” Last week, Axios reported that the U.S. recently proposed cooperating with Israel on joint military planning around Iran but denied they would plan to strike Iran’s nuclear program.

“Biden has dangerously shifted America’s policy on Israeli military action against Iran,” Trita Parsi, executive vice president of the Quincy Institute for Responsible Statecraft, told The Intercept. “Previous administrations made it crystal clear to Israel – including publicly – that an Israeli attack on Iran’s nuclear program would be destabilizing, would not prevent a nuclear Iran and would likely drag the US into a war it could do well without.

“Obama’s clear opposition played a crucial role in the internal deliberations of the Israeli cabinet in 2010 and 2011 when Israel was on the verge of starting war,” Parsi pointed out. In 2009, after then-Vice President Biden said “Israel can determine for itself … what they decide to do relative to Iran,” Obama clarified that his administration was “absolutely not” giving Israel a green light to attack Iran.

Israel’s own military officials concede that an attack on Iran would likely metastasize into a broader regional war. Earlier this month, retired Israel Defense Forces Brig. Gen. Amir Avivi reportedly said that “Israel might have to deal with the Iranian nuclear program,” adding that “this will mean an **Israeli attack on Iran which will probably result in a regional war**.”

IN JANUARY, JUST weeks before Israel’s secret exercise referenced in the intelligence report, the U.S. and Israel conducted what the Defense Department touted as their largest joint military exercise in history. Called Juniper Oak, the exercise involved “electronic attack, suppression of enemy air defenses, strike coordination and reconnaissance,” which experts said “are exactly what the U.S. and Israel would need to conduct a **successful kinetic attack on Iran’s nuclear program**.”

The unprecedented exercise was made possible by a little-noticed order by President Donald Trump just days before Biden’s inauguration. Using his authority as commander-in-chief of the armed forces, Trump ordered Israel be moved from European Command’s area of responsibility, where it had been located since 1983 to avoid friction with its Middle East neighbors, to that of Central Command, the Pentagon’s Middle East combatant command.

Under Biden, CENTCOM, whose area of responsibility includes Iran, has continued to coordinate closely with Israel. In March, Biden’s CENTCOM chief, Gen. Michael Kurilla, said in Senate testimony that the decision to move Israel from EUCOM to CENTCOM “immediately and profoundly altered the nature and texture of many of CENTCOM’s partnerships,” adding that “CENTCOM today readily partners with Arab militaries and the Israel Defense Force alike.”

“In fact, the inclusion of Israel presents many collaborative and constructive security opportunities,” Kurilla said. “Our partners of four decades largely see the same threats and have common cause with Israel Defense Forces and the Arab militaries in defending against Iran’s most destabilizing activities.”

Put simply, for the first time, the U.S. and both its Arab and Israeli allies are structurally aligned against a common foe: Iran.

At the same hearing, Sen. Tom Cotton, who had advocated for the relocation of Israel to CENTCOM weeks before Trump gave the order, raised the possibility of training Israeli pilots in the use of mid-air refuel aircraft. The lack of such aircraft, which allow fighter jets to travel long distances, is a key impediment to Israel’s ability to reach Iranian nuclear facilities.

“One of the opportunities I see is having Israeli Air Force personnel training alongside American personnel on KC 46 tankers, which we expect to provide them in future,” Cotton said. Kurilla, for his part, demurred, replying that training might be better “when they get closer to getting their aircraft … so they can retain that training and go right into the execution of operating them.”

THOUGH BIDEN CAMPAIGNED on reinstating the Iran nuclear deal — also called JCPOA, which Obama established and Trump pulled out of — the deal is all but dead.

“With Iran, any concerns about a nuclear program have sometimes been overwhelmed by a desire — based on partisanship in the U.S. and heavily influenced by the government of Israel — to isolate Iran and not do any business or negotiations with it at all,” Pillar told The Intercept. “Hence you had Trump’s reneging on the JCPOA agreement in 2018, with a direct result of that reneging being that there is now far more reason to be worried about a possible Iranian nuclear weapon than there was when the JCPOA was still in effect.”

Should Iran acquire a nuclear weapon, it would likely trigger a dangerous regional arms race. Saudi Arabia’s de facto ruler, Crown Prince Mohammed bin Salman, has made clear that **Riyadh would “follow suit as soon as possible**” with its own atomic bomb should Tehran obtain one.

But one key fact is often left out of discussions about Iran and the bomb: There’s no evidence that it’s actually pursuing one.

As the Pentagon’s most recent Nuclear Posture Review plainly states, “Iran does not today possess a nuclear weapon and we currently believe it is not pursuing one.” More recently, CIA Director William Burns reiterated that point in an interview with CBS in February. “To the best of our knowledge,” Burns said, “we don’t believe that the Supreme Leader in Iran has yet made a decision to resume the weaponization program that we judge that they suspended or stopped at the end of 2003.”

Iran’s policy could, of course, change. And tensions are rising in large part because of the U.S.’s recent posturing. For example, following the Juniper Oak exercise, Iran responded with its own military exercises, which Iranian military commander Maj. Gen. Gholam-Ali Rashid said they consider a “half war” and even a “war before war.”

In April, CENTCOM announced the deployment of a submarine armed with guided missiles in the Mediterranean Sea. This was likely a message directed at Iran, which quickly responded by accusing the U.S. of “warmongering.”

Earlier, in October, CENTCOM issued an extraordinary press release featuring Kurilla, the CENTCOM chief, aboard a submarine armed with ballistic missiles capable of carrying nuclear warheads in the Arabian Sea — another message for Iran.

On May 9, Pentagon spokesperson Brig. Gen. Pat Ryder announced that the military would be increasing its patrols in the Strait of Hormuz, through which many Iranian vessels travel. In his remarks, Ryder made particular mention of the P-8 Poseidon aircraft and the role it would play in bolstering maritime surveillance of the area.

The same aircraft made international news in 2019, when Iran disclosed that it almost downed a P-8 carrying U.S. service members that it claimed had entered its airspace, opting instead to shoot down a nearby drone. The U.S. military scrambled jets to strike Iran in retaliation, only to be called off by Trump 10 minutes before the attack when a general told him that the strikes would probably kill 150 people. The strikes would not, Trump said, have been “proportionate to shooting down an unmanned drone.”

#### **First strike solves—the US stalks Iran’s facilities**

Kroenig 12 [(Matthrew Kroenig is a Stanton Nuclear Security Fellow at the Council on Foreign Relations and the author of *Exporting the Bomb: Technology Transfer and the Spread of Nuclear Weapons.* From July 2010 to July 2011, he was a Special Adviser in the Office of the U.S. Secretary of Defense, responsible for defense strategy and policy on Iran.), JSTOR, <https://www.jstor.org/stable/5b600ca2-5ab5-3948-b1d8-e281b642c458?seq=6>, January 2012] TDI

DANGERS OF DETERRENCE

YEARS OF international pressure have failed to halt Iran's attempt to build a nuclear program. The Stuxnet computer worm, which attacked control systems in Iranian nuclear facilities, temporarily disrupted Tehran's enrichment effort, but a report by the International Atomic Energy Agency this past May revealed that the targeted plants have fully recovered from the assault. And the latest IAEA findings on Iran, released in November, provided the most compelling evidence yet that the Islamic Republic has weathered sanctions and sabotage, allegedly testing nuclear triggering devices and redesigning its missiles to carry nuclear payloads. The Institute for Science and International Security, a nonprofit research institution, estimates that Iran could now produce its first nuclear weapon within six months of deciding to do so. Tehran's plans to move sensitive nuclear operations into more secure facilities over the course of the coming year could reduce the window for effective military action even further. If Iran expels IAEA inspectors, begins enriching its stockpiles of uranium to weapons-grade levels of 90 per¬cent, or installs advanced centrifuges at its uranium-enrichment facility in Qom, the United States must strike immediately or forfeit its last opportunity to prevent Iran from joining the nuclear club.

Some states in the region are doubting U.S. resolve to stop the program and are shifting their allegiances to Tehran. Others have begun to discuss launching their own nuclear initiatives to counter a possible Iranian bomb. For those nations and the United States itself, the threat will only continue to grow as Tehran moves closer to its goal. A nuclear-armed Iran would immediately limit U.S. freedom of action in the Middle East. With atomic power behind it, Iran could threaten any U.S. political or military initiative in the Middle East with nuclear war, forcing Washington to think twice before acting in the region. **Iran's regional rivals**, such as Saudi Arabia, would likely decide to **acquire their own nuclear arsenals, sparking an arms race**.

To constrain its geopolitical rivals, Iran could choose to spur proliferation by transferring nuclear technology to its allies—other countries and terrorist groups alike. Having the bomb would give Iran greater cover for conventional aggression and coercive diplomacy, and the battles between its terrorist proxies and Israel, for example, could escalate. And Iran and Israel lack nearly all the safeguards that helped the United States and the Soviet Union avoid a nuclear exchange during the Cold War—secure second-strike capabilities, clear lines of communication, long flight times for ballistic missiles from one country to the other, and experience managing nuclear arsenals. To be sure, a nuclear-armed Iran would not intentionally launch a suicidal nuclear war. But the volatile nuclear balance between **Iran and Israel could easily spiral out of control as a crisis unfolds, resulting in a nuclear exchange between the two countries that could draw the United States in, as well.**

These security threats would require Washington to contain Tehran. Yet deterrence would come at a heavy price. To keep the Iranian threat at bay, the United States would need to deploy naval and ground units and potentially nuclear weapons across the Middle East, keeping a large force in the area for decades to come. Alongside those troops, the United States would have to permanently deploy signifi¬cant intelligence assets to monitor any attempts by Iran to transfer its nuclear technology. And it would also need to devote perhaps billions of dollars to improving its allies' capability to defend themselves. This might include helping Israel construct submarine-launched ballistic missiles and hardened ballistic missile silos to ensure that it can maintain a secure second-strike capability. Most of all, to make containment credible, the United States would need to extend its nuclear umbrella to its partners in the region, pledging to defend them with military force should Iran launch an attack.

In other words, to contain a nuclear Iran, the United States would need to make a substantial investment of political and military capi¬tal to the Middle East in the midst of an economic crisis and at a time when it is attempting to shift its forces out of the region. Deterrence would come with enormous economic and geopolitical costs and would have to remain in place as long as Iran remained hostile to U.S. inter¬ests, which could mean decades or longer. Given the instability of the region, this effort might still fail, resulting in a war far more costly and destructive than the one that critics of a preemptive strike on Iran now hope to avoid.

A FEASIBLE TARGET

A NUCLEAR IRAN would impose a huge burden on the United States. But that does not necessarily mean that Washington should resort to military means. In deciding whether it should, the first question to answer is if an attack on Iran's nuclear program could even work. Doubters point out that the United States might not know the location of Iran's key facilities. Given Tehran's previous at­tempts to hide the construction of such stations, most notably the uranium-enrichment facilities in Natanz and Qom, it is possible that the regime already possesses nuclear assets that a bombing campaign might miss, which would leave Iran's program damaged but alive.

This scenario is possible, but not likely; indeed, such fears are prob­ably overblown. U.S. intelligence agencies, the IAEA, and opposition groups within Iran have **provided timely warning of Tehran's nuclear activities in the past**—**exposing, for example, Iran's secret construction at Natanz and Qom before those facilities ever became operational**. Thus, although Tehran might again attempt to build clandestine facilities, **Washington has a very good chance of catching it before they go online**. And given the amount of time it takes to construct and activate a nuclear facility, the scarcity of Iran's resources, and its fail­ure to hide the facilities in Natanz and Qom successfully, it is **unlikely that Tehran has any significant operational nuclear facilities still unknown to Western intelligence agencies.**

Even if the United States managed to identify all of Iran's nuclear plants, however, actually destroying them could prove enormously difficult. Critics of a U.S. assault argue that Iran's nuclear facilities are dispersed across the country, buried deep underground and hardened against attack, and ringed with air defenses, making a raid complex and dangerous. In addition, they claim that Iran has purposefully placed its nuclear facilities near civilian populations, which would almost certainly come under fire in a U.S. raid, potentially leading to hundreds, if not thousands, of deaths.

These obstacles, however, would not prevent the United States from disabling or demolishing Iran's known nuclear facilities. A preventive operation would need to target the uranium-conversion plant at Isfahan, the heavy-water reactor at Arak, and various centrifuge-manufacturing sites near Natanz and Tehran, all of which are located aboveground and are highly vulnerable to air strikes. It would also have to hit the Natanz facility, which, although it is buried under reinforced concrete and ringed by air defenses, would not survive an attack from the U.S. mili­tary's new bunker-busting bomb, the 30,000-pound Massive Ordnance Penetrator, capable of penetrating up to 200 feet of reinforced concrete. The plant in Qom is built into the side of a mountain and thus repre­sents a more challenging target. But the facility is not yet operational and still contains little nuclear equipment, so if the United States acted quickly, it would not need to destroy it.

Washington would also be able to limit civilian casualties in any campaign. Iran built its most critical nuclear plants, such as the one in Natanz, away from heavily populated areas. For those less impor­tant facilities that exist near civilian centers, such as the centrifuge-manufacturing sites, U.S. precision-guided missiles could pinpoint specific buildings while leaving their surroundings unscathed. The United States could reduce the collateral damage even further by striking at night or simply leaving those less important plants off its target list at little cost to the overall success of the mission. Although Iran would undoubtedly publicize any human suffering in the wake of a military action, the majority of the victims would be the military per­sonnel, engineers, scientists, and technicians working at the facilities.

#### Israel is not afraid to nuke a nuclearized Iran

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Key point: Israel isn't afraid to conduct preemptive attacks. Israel’s nuclear arsenal is the worst-kept secret in international relations. Since the 1970s, Israel has maintained a nuclear deterrent in order to maintain a favorable balance of power with its neighbors. Apart from some worrying moments during the Yom Kippur War, the Israeli government has never seriously considered using those weapons. The most obvious scenario for Israel to use nuclear weapons would be in response to a foreign nuclear attack. Israel’s missile defenses, air defenses, and delivery systems are far too sophisticated to imagine a scenario in which any country other than one of the major nuclear powers could manage a disarming first strike. Consequently, any attacker is certain to endure massive retaliation, in short order. Israel’s goals would be to destroy the military capacity of the enemy (let’s say Iran, for sake of discussion) and also send a message that any nuclear attack against Israel would be met with catastrophic, unimaginable retaliation. But why might Israel start a nuclear war? Nuclear Pre-emption If a hostile power (let’s say Iran, for sake of discussion) appeared to be on the verge of mating nuclear devices with the systems needed to deliver them, Israel might well consider a preventive nuclear attack. In the case of Iran, we can imagine scenarios in which Israeli planners would no longer deem a conventional attack sufficiently lethal to destroy or delay the Iranian program. In such a scenario, and absent direct intervention from the United States, Israel might well decide to undertake a limited nuclear attack against Iranian facilities. Given that Iran lacks significant ballistic missile defenses, Israel would most likely deliver the nuclear weapons with its Jericho III intermediate range ballistic missiles. Israel would likely limit its attacks to targets specifically linked with the Iranian nuclear program, and sufficiently away from civilian areas. Conceivably, since it would be breaking the nuclear taboo anyway, Israel might target other military facilities and bases for attack, but it is likely that the Israeli government would want to limit the precedent for using nuclear weapons as much as possible. Would it work? Nuclear weapons would deal more damage than most imaginable conventional attacks,and would also convey a level of seriousness that might take even the Iranians aback. On the other hand, the active use of nuclear weapons by Israel would probably heighten the interest of everyone in the region (and potentially across the world) to develop their own nuclear arsenals.

### impact—prolif

#### Prime Minister of Saudi Arabia announced they would definitely proliferate if Iran acquired nukes

Reuters Staff 18 [(Reuters provides business, financial, national and international news to professionals via desktop terminals, the world's media organizations, industry events. Reuters tied for second place with DW, with 49 percent of respondents describing it as a trustworthy news brand. At a time when trust in the news matters more than ever, the top five most trustworthy news brands also included BBC News, CNN, and the New York Times) 03-15-2018, Reuters “Saudi crown prince says will nuclear bombs if Iran does: CBS TV, <https://www.reuters.com/article/us-saudi-iran-nuclear/saudi-crown-prince-says-will-develop-nuclear-bomb-if-iran-does-cbs-tv-idUSKCN1GR1MN>] TDI

RIYADH (Reuters) - Saudi Arabia will develop nuclear weapons if its arch-rival Iran does so, the kingdom’s crown prince said in remarks released on Thursday, raising the prospect of a nuclear arms race in a region already riven with conflict. FILE PHOTO: The Crown Prince of Saudi Arabia Mohammed bin Salman arrives at Lambeth Palace, London, Britain, March 8, 2018. REUTERS/Yui Mok/Pool “Saudi Arabia does not want to acquire any nuclear bomb, but without a doubt if Iran developed a nuclear bomb, we will follow suit as soon as possible,” Prince Mohammed bin Salman told CBS in an interview that will air in full on Sunday. The Sunni Muslim kingdom has been at loggerheads with revolutionary Shi’ite Iran for decades. The countries have fought a long-running proxy war in the Middle East and beyond, backing rival sides in armed conflicts and political crises including in Iraq, Syria, Lebanon and Yemen. He downplayed Iran’s power during the interview, saying that Iran was far from being a rival to Saudi Arabia. Iran’s Foreign Ministry spokesman Bahram Qasemi reacted harshly, saying the Saudi crown prince was a “delusional naive person” who has no idea of politics, Iranian state TV reported on Thursday. “He has no idea of politics apart from bitter talk that emanates from a lack of foresight ... His remarks do not deserve a response, because he is a delusional, naive person, who never talks, but with lies and bitterness,” Qasemi said. Prince Mohammed, who also serves as Saudi defence minister, said last year that the kingdom would make sure any future struggle between the two countries “is waged in Iran”, prompting Iranian threats to hit back at most of Saudi Arabia except the holy cities of Mecca and Medina. Riyadh has criticised the 2015 deal between world powers and Tehran under which economic sanctions on Iran were lifted in return for the Islamic Republic curbing its nuclear energy program. U.S. sanctions will resume unless President Donald Trump issues fresh “waivers” to suspend them on May 12. The comments by Prince Mohammed, who at 32 is heir to the throne, also have implications for Israel, another U.S. ally which neither confirms nor denies the widespread assumption that it controls the Middle East’s only nuclear arsenal. Israel has long argued that, should Iran develop nuclear weapons, it would trigger similar projects among the Persian power’s Arab rivals and further destabilise the region. It has never joined the 1970 nuclear Non-Proliferation Treaty (NPT) and has said it would consider inspections and controls under the NPT only if was at peace with its Arab neighbours and Iran.

#### Iranian proliferation causes regional war and spurs proliferation cascades across the Middle East

Chilton and Hoshovsky 20 – [(Kevin, led U.S. Strategic Command and has participated in the Jewish Institute for National Security of America’s Generals and Admirals Program; Harry, policy analyst at JINSA’s Gemunder Center for Defense and Strategy) "Avoiding a nuclear arms race in the Middle East," Defense News, <https://www.defensenews.com/opinion/commentary/2020/02/13/avoiding-a-nuclear-arms-race-in-the-middle-east/>, 2-13-2020,] TDI

U.S. President Donald Trump recently remarked that his foremost priority regarding Iran is preventing its regime from acquiring a nuclear weapon. Refocusing attention on Tehran’s nuclear program is critical given its announcement that it will exceed the limits on how many centrifuges it can operate for uranium enrichment. This decision not only renders the Joint Comprehensive Plan of Action, or JCPOA, as increasingly obsolete, but it will also accelerate Iran’s breakout timetable, which some experts now believe is only four to five months. This raises two immediate concerns. First, should Iran race for the bomb, it is almost inevitable that the United States and/or Israel will take preventative military action to stop it from crossing that fateful threshold. This could easily spiral into a regional war as Iran activates its various proxy forces against the United States and its allies. Second, an Iranian nuclear breakout attempt could spur a proliferation cascade throughout the Middle East, beginning with Saudi Arabia. Mohammed bin Salman, the Saudi crown prince, openly stated in 2018 that if Iran developed nuclear weapons, Riyadh would quickly “follow suit.” One suggested approach would see Saudi Arabia purchase a nuclear power reactor from a major supplier like South Korea and then build a reprocessing plant that would yield enough weapons-grade plutonium in five years. A half-decade delay isn’t optimal, however, when the goal is achieving nuclear deterrence quickly. Thus, there is the so-called Islamabad option. This refers to Riyadh’s role in financing Pakistan’s nuclear weapons program and an alleged commitment from Islamabad that it would repay the favor. While Pakistani and Saudi officials have denied any such understanding, there is the possibility that the two could work out an arrangement where Islamabad could deploy some of its nuclear arsenal on Saudi soil following a successful Iranian breakout. Although this maneuver would draw sharp, international criticism, in theory, it would allow Riyadh to remain in good standing vis-a-vis the nuclear nonproliferation treaty. Nevertheless, Pakistan might not be willing to play spoiler against a nuclearized Iran. If it is, Middle Eastern geopolitics would become extremely unstable. On the plus side, Egypt and the United Arab Emirates will probably refrain from joining the proliferation cascade. After initially flirting with a nuclear weapons program under Gamal Abdel Nasser, subsequent Egyptian presidents made nuclear disarmament a core pillar of their foreign policy objectives. For the UAE, it signed a “123 Agreement” with the United States in 2009 that contained what is now termed the “gold standard” addendum whereby Abu Dhabi forswore enrichment and reprocessing. While the Emirates were understandably unhappy with Washington’s subsequent signing of the far less restrictive JCPOA, reneging on their own nuclear commitments would only damage relations with Washington at this point. Of course, concerns about a nuclear cascade can be avoided if Iran is prevented from going nuclear in the first place. A possible solution to Riyadh’s dilemma would see the U.S. commit to extending its nuclear umbrella over Saudi Arabia should Iran declare itself a nuclear weapons power. This could help repair American credibility in the kingdom’s eyes, which has slowly eroded over the last decade as Riyadh increasingly doubts Washington’s strategic commitment to the region. Earlier this month, national security adviser Robert O’Brien told President Trump that continued sanctions and burgeoning civil unrest “will force [Iran] to negotiate.” This process can be accelerated if Washington rallies its European allies to reimpose the so-called snapback sanctions. This refers to the fact that any JCPOA participant can officially complain about a possible Iranian violation of the accord. This launches the bureaucratic process that can conclude with the reimposition of U.N. sanctions if the complaint remains unresolved. On this point, Germany, France and the United Kingdom announced that they would trigger the snapback dispute mechanism after rejecting Iran’s argument that it was justified in violating the JCPOA because the United States had withdrawn from the deal. Unfortunately, this does not necessarily mean the return of multilateral sanctions, as the Europeans are still focused on bringing Tehran back into compliance with the nuclear accord. China and Russia have similarly called for diplomacy to save the JCPOA; however, their motivations are primarily self-serving. Beijing is Iran’s largest trading partner, and bilateral trade has suffered because of U.S. sanctions; and Moscow views Tehran as a lucrative future market for its weapons, and is actively fighting attempts to extend the U.N. arms embargo that expires later this year.

#### Iranian proliferation causes nuclear war

**Jamal 14**  [(Umair, Umair Jamal is a graduate student at the School of Government and International Affairs at the University of Durham) “The Iranian Nuclear programme: Impact on Regional Stability and Security,” E-International, http://www.e-ir.info/2014/09/04/the-iranian-nuclear-programme-impact-on-regional-stability-and-security/, 9-4-2014]

The Iranian nuclear programme has surfaced as one of the chief security, political and diplomatic challenges of the 21st century. Undoubtedly, the Iranian nuclear programme would ‘throw existing security structures into flux’ causing a ‘fundamental rethink in regional strategic alignments’ (Kaye and Wehrey, 2007, p. 120). Nuclear Iran is likely to complicate an already intricate geopolitical orientation of the Middle East, whose history has been mired in conflicts, distrust and a range of other integrated factors. In the region, Iran’s nuclear programme has caused serious anxiety among its neighbouring states, particularly Arab GCC states and Israel (Ehteshami, 2010). Kaye and Wehrey (2007, p. 125) argue that reactions from neighbouring states span a broad spectrum, ranging from ‘accommodation and detente to outright hostility and opposition’ including ‘efforts to acquire a countervailing [nuclear] deterrent’. Undeniably, the complexity of forming cooperative security structures in the Middle East cannot be neglected. There are many prevailing uncertainties. Whether Iran’s nuclear programme has an actual military dimension remains uncertain and hypothetical (Khan, 2009). Undeniably, suspicions of an ambiguous and aggressive Iranian foreign policy and nuclear programme have ‘sharply increased regional tensions’ (Gasiorowsky, 2007, p. 125) despite Iran’s persistent claims that its nuclear programme is for peaceful energy purposes (Khan, 2010). In the world of academia, scholars have tried to elucidate the Iranian nuclear programme and its possible impact on regional stability and on that of the world at large by presenting empirical evidence and making strong theoretical representations. On one hand, it is widely believed that nuclear weapons kept the peace and stability between the US and the USSR during the long conflict of the cold war era. On the other hand, however, it is also believed that proliferation of nuclear weapons is dangerous and could cause further instability. In Middle Eastern perspective, some prominent scholars believe that further spread of nuclear weapons would have a stabilizing impact on the Middle East (Waltz, 1981; Mearsheimer, 1990). However, their optimistic observation could hardly escape criticism where numbers of prominent scholars have argued that nuclear deterrence and proliferation of nuclear weapons may not be stabilizing effects or cause stability in specific regional settings (Sagan, 1994; Dunn, 1991; Kaiser, 1989 and Miller, 1993). Given the complex and combustible nature of the Middle East geo-political and geo-strategic situation, this paper argues that if Iran acquires nuclear weapons or continues its course in their pursuit, it will have serious implications not only for the regional stability but also for the world, at large. In order to build on the more compelling reasoning that Iran’s nuclear programme is a liability for regional stability, this essay first discusses the logic of deterrence theory, which suggests that the Iranian nuclear programme would have a stabilizing impact on the region. Second, the essay builds on its major argument that deterrence theory is unlikely to work in the Middle East due to a number of different reasons which support proliferation in this area. Following on from this, the behaviour of the GCC states, which deem Iran an enemy and consider a nuclear Iran a threat to their stability and geopolitical interests, is discussed. Next, this paper argues that a balance of power between Iran and Israel would create a security dilemma between Iran and the GCC states, thus producing more power struggles and instability. Further, the reasoning behind allowing the proliferation of nuclear weapons in the region (if Iran were to acquire them) is considered. Connected with this development is the logic of multipolarity, which inherently, is considered more conflict prone and contains higher probability of miscalculation. Finally, this paper delves into the prospects of an Israeli pre-emptive strike on Iran, which given Israel’s historic behaviour and policy posture, cannot be ruled out. It is argued that whether a conventional strike or nuclear, it would have devastating impacts on the region. The paper concludes by summarizing all the arguments. Before moving towards the more compelling logic of proliferation and its consequences, it is pertinent to examine the logic of nuclear deterrence theory. According to this, a mutual nuclear deterrence promotes stability, avoids escalation of hostilities, restores balance and averts miscalculation that could convert to a nuclear war (Feldman, 1982). The idea of nuclear deterrence is primarily associated with Waltz who is the chief proponent of the theory of nuclear deterrence and weapons spread, and from the Waltz perspective, the impact of proliferation would be less menacing than is usually believed (Waltz, 1981). From a Middle Eastern perspective, Waltz contends that if Iran acquires nuclear weapons, it would have stabilizing effects on the region. Waltz is very forceful in making this argument by saying that if Iran were to acquire nuclear weapons it ‘would probably be the best possible result: the one likely to restore stability to the Middle East’ (Waltz, 2012, p. 1). Bader (1968) argues that in order to continue the flexibility needed to correct the arms imbalance in one region, the provision of nuclear weapons to one or more antagonists may have stabilizing impacts on any region. In a similar vein Waltz (2012, p. 2) argues that ‘power begs to be balanced’ and it is the military imbalance between Iran and Israel that has caused the instability. It is inferred that the logic of a deterrence and proliferation optimism position flows from the assumptions of rational deterrence theory (Sagan, 1994). From this perspective, if Iran becomes a nuclear power, the concept of Mutual Assured Destruction (MAD) could restore a balance between Iran and Israel as it is universally believed that it was nuclear weapons and the MAD situation, not treaties, which kept the long peace between the two super powers during the Cold War (Sirimarco, 2005, p. 25). Similarly, this can offer a stable balance in the Middle East. Waltz (1981) argues that nuclear weapons are the weapons of de-escalation rather than escalation and instability. This judgement stresses that nuclear deterrence could work between Iran and Israel and it would restrain both from escalating any conflict to a nuclear level because of the potential devastation these weapons could unleash. De Mesquita and Riker (1982, p. 291) argue that the ‘presence of an explicit or underlying nuclear threat constrains conflict by reducing its likelihood of escalating into nuclear war’. According to the proponents of nuclear proliferation, particularly Waltz (1981), even the proliferation of nuclear weapons is better. While arguing this, advocates of nuclear deterrence downplay the negative impacts of nuclear proliferation in general and particularly in the case of the Middle East. Whilst arguing that nuclear deterrence between Israel and Iran could stabilize the region, they overlook other geopolitical realities, the region’s complexities, and concerns connected with nuclear proliferation, all of which could become more dangerous if Iran continues its nuclear drive or actually acquires nuclear capability. Moreover, the limitations to deterrence theory between Iran and Israel in the Middle East are amplified because of a number of reasons for proliferation which operate independently of deterrence theory assumptions (Hagerty, 1998). Reasons for proliferation are more compelling according to which deterrence is unlikely to work in the Middle East. As Miller (1993, p. 69) argues ‘the proposition that nuclear weapons promote peace and stability is properly regarded not as a fact but as an interpretation, largely based on the evidence of a single case’. Dunn (1982) argues that many of the technical, political and situational roots of stable nuclear deterrence may be lacking in the Middle East where there is a high probability of nuclear weapons being used. He further contends that the heightened ‘stakes and lessened room for manoeuvre in conflict-prone regions, the volatile leadership and more regional instability’ all undermine the credibility of deterrence (Dunn, 1982, p. 75). Posen (1991) in his theoretical model of inadvertent escalation contends that the phenomenon of war, behaviour of military organizations, and the security dilemma, which exists even in nuclear parity, are a cause of frustration. In the nuclear realm, the case of Pakistan and India is pertinent to support the case of inadvertent escalation: Pakistan fought the Kargil war with India under a nuclear weapons umbrella which could have inadvertently or accidentally escalated into a nuclear war (Betts, Sagan and Waltz, 2007). Similarly, Rajhaven (2001, p. 83) contends that ‘Kargil indicated that armed with nuclear weapons, Pakistan has augmented confidence that it could raise the conflict thresholds with India’. While many have argued that nuclear weapons kept peace during the Cold War, there is a growing body of literature that shows there were many nuclear security lapses between the US and the USSR which could have caused accidents (Sagan, 1993). Snyder’s (1961) stability–instability paradox, which emphasizes that a limited conventional war is possible under the presence of nuclear weapons, is a huge risk where conflict could accidentally turn into a nuclear one. Along the same lines Waltz contends that under the stability–instability paradox nuclear weapons ‘tempt countries to fight small wars’ (Kapur, 2007, p. 36); but as Nye (1987) argues, in the complex domain of international relations it is not surprising that the power of theories is constrained and any minor escalation could turn a conventional conflict into a nuclear one. From this perspective, as in South Asia, the situation in the Middle East is far from stable and could lead inadvertently to a nuclear escalation during a conventional conflict between Iran and Israel. Gompert (1977, p. 146) warns that in a potential conventional conflict, actors may ‘assemble their nuclear weapons in the heat of conflict’, with disastrous consequences. Mearsheimer (1993, p. 51), an advocate of nuclear deterrence, even concedes that ‘widespread proliferation increases the chances of accidents and nuclear terrorism’. Nuclear accidents and unauthorized nuclear use are more likely to happen in a more proliferated nuclear and unstable regional setting (Hagerty, 1998). Another chief critique of the Waltz nuclear deterrence theory is Sagan’s (1994) organization theory which emphasizes the dangers posed by the behaviour of military organizations and their interests, and the lack of adequate civilian control which could cause the deterrence failures. Sagan’s theory further stresses the importance of misunderstanding, misinformation and misconstruing of information (Krieger, 2000). As Weltman (1981) concedes ‘hostilities involving nuclear weapons may occur prior to the lapse of enough time for a mutually stable weapons posture to develop’ and the absence of effective communication systems may cause misunderstanding between the actors. For deterrence to work, it is pertinent that each state has the second strike capability, long flight times and hotline communication systems to avoid miscalculation, which were salient between the US and the USSR during the Cold War and are completely missing in the Middle Eastern (Iran–Israel) region (Edelman, Krepinevich and Montgomery, 2011). In the Middle Eastern context, Iran and Israel’s trust deficit and almost zero communication structures make this grave possibility more likely. Another impetus to nuclear instability is the potentially disastrous timing of proliferation (Hegerty, 1998). Even Waltz (1981) agrees that ‘the timing of nuclear spread in regions of chronic political turmoil may lead to instability’. Many analysts believe that potential nuclear powers may have a very short time to assimilate their nuclear weapons into ‘military forces and doctrines before conflicts erupt that will make nuclear learning impossible’ (Hagerty, 1998, p. 65).All these complexities of Middle Eastern strategic order make the likelihood of a workable deterrence highly questionable, and failures rather more likely. Moreover, Iran’s nuclear drive is likely to create more security dilemmas rather than a balance of power in the Middle East. Another argument that purports stability through bilateral deterrence between Iran and Israel ignores Iran’s rivalry and hostility with other GCC Arabs states, particularly Saudi Arabia, which can generate a security dilemma via-s-via Iran, hence more power struggles and instability. As Nye (1987, p. 380) maintains, ‘a balance of power is essential but difficult to maintain’ and further argues that in an ‘anarchic world states vie for power in the context of intense security dilemma’ according to which the defensive posturing of one appears offensive to another, and therefore incites escalation (Jervis, 1978). Iran’s rivalry with the GCC Arab states is independent of its rivalry with Israel and the US because of different ideological, ethnic and geopolitical reasons and it adds fears that ‘Iran’s nuclear ambition would trigger a spate of nuclear proliferation across the Middle East’ (Mabon, 2013, p. 209). Interestingly, Waltz (2010) calls for a nuclear balance of power between Iran and Israel and doesn’t discuss other imbalances it could generate between Iran and other regional states. Ehteshami (2010) argues that ‘Iran’s strategic rise exposes it to classic counterbalancing in a region such as the Middle East, in which power politics continue to dominate the region’s interstate relations’. Moreover, as Walt’s (1987) ‘Balance of threat’ theory explains, states respond to any rising power by ‘balancing’ against it rather than ‘bandwagoning’. Walt further contends that even at the height of Pan-Arabism, balancing against Egypt was not just practised by ‘conservative monarchies but even by ostensibly Pan-Arab regimes in Syria and Iraq when Nasser posed a threat to them’ (Hinnebusch, 2003, p. 64). From this perspective, Arab GCC states are likely to take some countermeasures to bridge this security dilemma with Iran and perhaps the nuclear option could be the starting point. The Middle East is different from South Asia where only two powers are major adversaries and arguably had the economic means to develop nuclear weapons. In the Middle East, the oil rich Gulf States have an abundance of economic means at their disposal to start a nuclear programme if Iran acquires nuclear weapons. Posen (1991) argues that the leaders of states often do not comprehend how aggressive their behaviour, though defensively stimulated, may appear to others. The concept of ‘Balance of power’ comprehends this security dilemma very well where a balance of power between Iran and Israel could generate an imbalance between Iran and the GCC Arab states, particularly Saudi Arabia. Given Iran’s historic aggressive posturing in the region, its regional ambitions and fears of the neighbours are not ill founded. Iran’s neighbours, particularly the GCC Arab states and Israel, are concerned about Iran’s behaviour if it becomes a nuclear power. As Ehteshami (2010) notes, GCC states, which frequently wrangle internally, unite on the question of nuclear Iran. Iran’s history with its neighbours is mired in misperceptions, political disputes, geopolitical struggles, and ideological rivalries. As Gause (2007) notes, Iran and the GCC Arab states have ideological, sectarian, and ethnic differences, and an engendered threat awareness from these perceptions puts them on a collision course rather than on the road to cooperation. Many fear that Iran has regional ambitions and once it has gained nuclear capability it would be more aggressive and assertive as a result of this (Kaye and Wehrey, 2007). Many even argue that the Iran’s nuclear programme doesn’t have any credible rationale behind it and its offensive in nature. As Chubin and Litwak (2003, pp. 102–103) have argued, ‘with the demise of Saddam’s regime in neighbouring Iraq, an Iranian nuclear programme has lost any compelling strategic rationale’. They further argue that Iran has used Israel as a diversion and pretext in which Tehran uses its support for Palestinians to divert its neighbour’s attention from its own nuclear programme (Chubin and Litwak, 2003). Ehteshami and Zweir (2007) argue that Iran’s ‘neocons,’ who have supported Ahmadinejad’s neo-revolutionary and neo-populist policies, supported by the spiritual leader, Ayatollah Khamenei, are certain that Iran should be bold and resolute in completing its historic mission to guide the region and the wider Muslim states towards a just world. Furthermore, Iran has been implicated with developing a ‘Shia crescent’ covering Iraq and the Levant (Ehteshami, 2010). As Ashley (2012) observes, there is a ‘deeply ideological desire to become the predominant power in the region’. Moreover, Israel’s strategic fears are not just voices of rhetoric but are well founded. According to Chubin and Litwak (2003, p. 103) ‘Iran’s quest for nuclear weapons combined with its roots of not recognizing Israel, supporting attacks against it, and seeking to derail any peace process that might be in motion, add to the concerns about Iran as a proliferator’. The fears of Gulf States are not devoid of reality given the loss of Iraq as a Sunni Arab bulwark and Iran’s consolidating influence there (Kehrey and Waye, 2007). For the Saudis, nuclear Iran is likely to intensify its Shia ascendency in Iraq and this sort of development would present an existential threat to Sunni Arab monarchies in the region (Kehrey and Waye, 2007). In this case, Saudis are willing to respond with a similar policy of exploiting cross-border tribal ties and providing financial and military support to Sunni militants in Iraq (Obaid, 2006). The worst fear among neighbouring states is that a nuclear Iran could be more aggressive in its political and military pursuits in the region and could provide more support to its militant proxies; they could then engage with more impunity under the umbrella of Iranian nuclear weapons. To support this possible development, Sagan highlights the behaviour of Pakistan, which soon after its nuclear experiments developed a more aggressive and belligerent posture with regard to India, and its military backed a Jihadist incursion into the Indian-controlled Kashmir which subsequently began the Kargil War in 1999 (Sagan, Betts and Waltz, 2007). The UAE is concerned about building Iranian pressure on the disputed Gulf islands of Greater and Lesser Tumbs and Abu Musa. Whether Iran’s nuclear programme is offensive or defensive in nature, the threat perception which its neighbours are aware of is not ill founded, and even indirectly, Iran’s nuclear posture is feeding its regional ambitions (Ehteshami, 2010). This would certainly lead to more nuclear proliferation in the region. Proliferation of nuclear weapons is likely to take place if Iran acquires nuclear weapons in a move that would further complicate the military landscape of the region (Ehteshami, 2010). Some analysts believe that Iran’s potential nuclear drive has already started a nuclear proliferation in the Middle East (Kaye and Wehrey, 2007). Many observers contend that along with the possibility of a nuclear arms race it would raise the possibility of a highly unstable regional conventional arms race (Kaye and Wehrey, 2007). In 2007, GCC representatives met with officials from the International Atomic Energy Agency to consider a preliminary study for the nuclear programme. Another danger tied to Iran’s nuclear programme and further proliferation would be the question of the capability of the international community to stop further proliferation in the Middle East or globally (Lindsay and Takeyh, 2010). The Commission on the Prevention of Weapons of Mass Destruction, Proliferation and Terrorism, as well as other analysts, have highlighted the risk that ‘even if Israel does not declare its own nuclear arsenal’ proliferation is likely to happen and countries that are expected to enter the nuclear arms race are Saudi Arabia, Bahrain, Egypt, Jordan, Turkey and the United Arab Emirates (Edelman, Krepinevich and Montgomery, 2011, p. 2). This would lead to a frightening crisis of both a nuclear and conventional arms race in the Middle East, a region where unstable states and violent non-state actors are rampant. Moreover, this would question the credibility and undermine the efforts of international institutions that are working to stop the spread of this doomsday weapon. This likely spread would generate a multipolar nuclear region which would be less stable than any bipolar scenario. Another development that further undermines any relevance of deterrence is a ‘multipolar scenario’ in a region where more than two states would have nuclear weapons. As Waltz argues, in the multipolar world ‘who is a danger to whom and who can be expected to deal with threats and problems are matters of uncertainty’ (Waltz, 1988, p. 622). He further contends that ‘dangers are more diffused and miscalculations are the main source of danger’ (Waltz, 1988, p. 623). As evidence shows and as discussed above, many other states (particularly Saudi Arabia), which consider Iran an independent threat, are likely to obtain nuclear weapons, and a nuclear interaction among three or more nuclear states in the region would further endanger the fragile peace. Apart from other political and security complexities, a multi-nuclear Middle East would be different from a Cold War bipolar system, where the US and the USSR were just concerned with each other (Hagerty, 1998). Multipolarity is deemed less stable because the ‘coalitions can shift quickly, upsetting the balance of power and creating incentives for an attack’ (Edelman, Krepinevich and Montgomery, 2011, p. 4). Adding more to these likely fears is an additional threat of a pre-emptive strike from Israel and the US. Another danger tied to Iran’s nuclear programme is a possible pre-emptive strike from Israel on Iran. Israeli Prime Minister Benjamin Netanyahu has reiterated on several occasions that he would stop Iran at any cost from obtaining nuclear weapons. As Khan (2009, p. 61) argues, looking at Israel’s previous attacks on Iraqi and Syrian nuclear facilities ‘in extreme situations it is expected to attack Iran pre-emptively or preventively’. Some analysts have even argued that because of Israel’s small size it is a ‘one-bomb state’ (Rosenbaum, 2012, p. 21) and because of Iran’s large size it ‘can win a nuclear war with Israel’ (Parsi, p. 271). It is likely that Israeli leaders might use the ‘Samson option’ (Khan, 2009) and strike first because ‘Israel’s small size means that even a few nuclear detonations on its soil would be devastating’ (Kaye and Wehrey, 2007). Whether the pre-emptive strike is conventional or nuclear it would have serious impacts on the region, and as the British military historian Barnett believes, ‘an attack on Iran would effectively launch World War Three’ (Chomasky, 2007, p. 209). Chubin and Litwak (2003, p.109) argue that the ‘policy of a pre-emption strike is as problematic as any other options’ and beyond the practical issues ‘the political consequences of a military strike on Iran could be highly adverse’ and an attack might trigger an anti-US backlash that would be bound to ‘undermine prospects for near-term political change and eventual rapprochement between the US and Iran’. As many analysts argue, a pre-emptive strike on Iran would not dismantle its nuclear programme; rather it would ‘further strengthen Iran’s determination to go nuclear’, and would certainly trigger a costly retaliation in the Middle East politically and militarily (Edelman, Krepinevich and Montgomery, 2011, p. 6). Smaller states in the Middle East are worried about getting caught in the cross fire where Iran could attack US military bases in their countries in retaliatory attacks (Kaye and Wehrey, 2007). Analysts have repeatedly pointed to the tremendous lethality of Hizbullah, which is another element of worry if an attack happens (Sadr, 2005). Moreover, in complete absence of any dialogue or detente measures between Israel and Iran, the situation looks bleaker still and a likely pre-emptive strike on Iran would certainly have unprecedented consequences on the region’s stability. By considering all aspects, it is evident that Iran’s nuclear programme would have very destabilizing impacts on the Middle East, particularly on the region’s security. Even though Waltz’s deterrence theory presents a positive outlook of Iran’s nuclear programme on the region, proliferation rationales, which assume that the region would become more conflict prone if Iran were to acquire nuclear weapons, are more compelling. Neighbours’ fears of Iran’s regional hegemonic ambitions and the emergence of new security dilemmas could ignite a nuclear arms race in the region, hence more proliferation. This could lead to a multipolar regional scenario which is regarded as being highly unstable. Moreover, a complex unstable regional order, the lack of communication infrastructure between Iran and Israel, and a likely pre-emptive strike make the equation more devastating, and, perhaps, as some analysts argue, it could light up a nuclear war.

#### Iranian nuclear acquisition causes proliferation cascades that ensure war

Inbar 21 [(Efraim, M.A and a Ph.D. from the University of Chicago, after finishing undergraduate studies in Political Science and English Literature at the Hebrew University in Jerusalem.) “Iran and Israel: The Inevitable War?”, The Jerusalem Institute of Strategy and Security, https://jiss.org.il/en/inbar-iran-and-israel-the-inevitable-war/, 06-01-2021} TDI Eljoe

The Strategic Implications of Iran’s Ambitions Revolutionary Iran is characterized by far-reaching goals in its foreign policy, a propensity for high risk policies, intensive commitment and determination to implement these policies, and an unconventional diplomatic style.[16]If Iran becomes nuclear, these foreign policy features will probably become even more pronounced. Iran’s nuclear program, coupled with long-range delivery systems, threatens regional stability in the Middle East. Iran produces a variety of long-range missiles, including the Shehab-3 (range of 1,300 kilometers) and the Sejjil (range of 2,000 kilometers). It also develops a cruise missile with a range of beyond 2000 kilometers. States such as Israel, Turkey, Saudi Arabia, and the Gulf States are within range, as well as several important U.S. bases. Further improvements in Iranian missiles could put most European capitals, and eventually, the North American continent, within reach of a potential attack. Iran has an ambitious satellite launching program which is based on the use of multi-stage, solid propellant launchers, with intercontinental ballistic missile properties to enable the launching of a 300-kilogram satellite. Achieving this goal will put more states at risk of a future nuclear attack. A nuclear Iran would also enhance Iranian hegemony in the strategic energy sector, due to its mere location along the oil-rich Persian Gulf and the Caspian Basin. These two adjacent regions form the “energy ellipse,” which holds about 70 percent of the world’s proven oil and about 40 percent of its natural gas reserves.[17] Giving Iran a better ability to intimidate the governments controlling parts of this huge energy reservoir would further strengthen Iran’s status. Even a state like Saudi Arabia might decide to bandwagon[18] under certain circumstances. A nuclear Iran will result in the loss of the Central Asian states to the West. These former Soviet republics have adopted a pro-Western foreign policy orientation since the collapse of the Soviet Union. Following the emergence of a nuclear Iran, they will either bandwagon toward Iran or will try to secure a nuclear security guarantee from Russia or China, countries much closer to the region than the US. In further pushback towards the West, Tehran encourages radical Shiite elements in Iraq in order to force an American withdrawal. It also foments trouble via the Shiite communities in the Gulf states. Iran is further allied with Syria, a radical state with an anti-American predisposition. Moreover, Tehran lends critical support to terrorist organizations such as Hizballah, Hamas, and Islamic Jihad. According to the US State Department, Iran is the most active state sponsor of terrorism. Iranian successes would embolden Islamic radicals everywhere. A nuclear Iran might try to destabilize Turkey – a country with strategic weight. Secular Turkey has been an anathema for revolutionary Iran. Tehran already tried in the 1990s to meddle in Turkish affairs and strengthen the extreme Islamist forces. Nowadays, revolutionary Iran may capitalize on the ongoing identity crisis in Turkey in order to increase the power of the radical Islamists. The loss of Turkey to the West would be a strategic blow. As Pakistan has to consider a nuclear state on its western border, changes in its nuclear posture are likely, affecting the nuclear equation in the subcontinent. The nuclear chain effect might even reach China. A nuclear Iran might further erode the international nuclear non-proliferation regime (NPT) and hinder American attempts to curb proliferation. A nuclear-armed Iran would also have a chain-effect, generating nuclear proliferation in the immediate region. Middle Eastern states, which invariably display high threat perceptions, are unlikely to look nonchalantly on a nuclear Iran. American extended deterrence, particularly these days, is not credible in the Middle East. Therefore, these states would not resist the temptation to counter Iranian influence by adopting similar nuclear postures.[19] A multi-polar nuclear Middle East would be a recipe for disaster. This strategic prognosis is the result of two main factors: a) the inadequacy of a defensive posture against nuclear weapons, and b) the difficulties surrounding the establishment of stable nuclear deterrence in the region. The belief in the stabilizing effects of nuclear proliferation is wishful thinking on the part of irresponsible arm-chair strategists.

### first-strike—2nr

#### Israel first-strike causes Middle East war and exacerbates prolif

Horschig 19. [(Doreen, PhD Candidate in Security Studies, University of Central Florida), “Israel could strike first as tensions with Iran flare,” The Conversation, 06/20/2019, <http://theconversation.com/israel-could-strike-first-as-tensions-with-iran-flare-119146>] TDI

If the nuclear deal ruptures further and Iran does restarting uranium enrichment, Israel might **launch targeted airstrikes against it**. Risks of an Israeli strike History suggests other countries are unlikely to actively deter Israeli military aggression in the guise of nuclear nonproliferation. The Trump administration has expressed anti-Iranian sentiment and is a staunch backer of Netanyahu’s government. And while European powers will recognize preemptive Israeli strikes on nuclear facilities as a violation of international law and of the sovereignty of Israel’s neighbors, they also see Iran’s nuclear program as a grave global security concern. A **nuc**lear Iran could **escalate ongoing Middle East conflicts** into **nuclear exchanges**, and, as some commentators say, **spur other regional powers** like **Saudi Arabia** and **Egypt** to develop **nuc**lear weapon**s** themselves. Of course, potential **Israeli attacks** on Iran present their own **serious risks**. Because most of Iran’s reactors are in full operations, air strikes may mean cutting off the power supply to Iranian citizens and could release **large amounts of radioactive contaminants into the air**. Iran, a militarily well-equipped country, would surely **retaliate against any Israeli attacks**. That, too, would **trigger a conflict that would spiral throughout the Middle East**. Of course, Israel faced similar dangers when it went after the weapons programs of Syria, Iraq and other neighbors.

#### A no-first-use policy fails for US deterrence.

Harvey 19 [(John R, Writer for War on the Rocks), “Assessing the Risks of a Nuclear No First Use Policy,” War on the Rocks, 07/02/2019, <https://warontherocks.com/2019/07/assessing-the-risks-of-a-nuclear-no-first-use-policy/>] TDI

There are three major risks in adopting a nuclear declaratory policy of no-first-use. The first risk is to deterrence: Adversaries, absent fear of reprisal, could be emboldened to act against U.S. interests. The second risk is to U.S. assurances to its allies: If America adopts no-first-use, then allies could lose confidence in America’s extended deterrence commitments. The third risk is to the goal of non-proliferation: Such lost confidence among America’s allies could spur them to develop and field their own nuclear weapons. There are three major risks in adopting a nuclear declaratory policy of no-first-use. The first risk is to deterrence: Adversaries, absent a fear of reprisal, could be emboldened to act against U.S. interests. The second risk is to U.S. assurances to its allies: If America adopts no-first-use, then allies could lose confidence in America’s extended deterrence commitments. The third risk is to the goal of non-proliferation: Such lost confidence among America’s allies could spur them to develop and field their own nuclear weapons. The purported benefits of adopting a no-first-use policy, which I discuss below, are insufficient to offset these inherent risks. Every president since Dwight Eisenhower has viewed nuclear weapons not just as another weapon of war augmenting conventional arms, but as a special kind of weapon to be used only in the direst circumstances when vital U.S. security interests are at stake. The main concern in adopting a policy of no-first-use is that it could lead an enemy to believe that it could launch a catastrophic, non-nuclear strike against the United States, its allies, or U.S. overseas forces without fear of nuclear reprisal. Consider, for example, a North Korean biological attack on an American city that kills hundreds of thousands, or an artillery bombardment of Seoul with chemical weapons, resulting in the deaths of tens of thousands of Korean and U.S. forces and citizens. Would North Korea be more willing to contemplate such attacks if it thought it was immune to a U.S. nuclear response? Recent presidents have been unwilling to accept the risk to deterrence that would accompany a pledge of no-first-use. Two factors might mitigate such risks to deterrence were a no-first-use policy adopted. First, a no-first-use pledge is unlikely to appear credible to an adversary contemplating major aggression. For example, North Korea is unlikely to base any military planning to reunify the Korean Peninsula by force, or plans for its regime survival after an unsuccessful effort to achieve that objective, on a U.S. promise of no-first-use. Consider China’s existing no-first-use pledge, which has not caused the United States to moderate its own nuclear posture one iota. Few states will risk their national security based on a declaratory policy that can be reversed overnight. Dominic Tierney, an academic who supports a no-first-use policy, eloquently addresses this point: Viewed through a strategic — and perhaps more cynical — lens, the no-first-use doctrine also has a huge credibility problem. For the U.S. pledge to truly matter, a president who otherwise favors a nuclear first strike would have to decide not to press the button because of this policy. But in an extreme national crisis — one involving, say, North Korean nuclear missiles — a president is unlikely to feel bound by America’s former assurance. After all, if a country is willing to use nuclear weapons, it’s also willing to break a promise. Second, it’s not at all clear that an adversary could count on U.S. public opinion to act as a “brake” on an American president contemplating first use in response to a catastrophic non-nuclear attack. Several surveys conducted by Scott Sagan and Ben Valentino look at the American public’s willingness to support first-use under such circumstances. The results reveal a surprising level of support. Sagan and Valentino thus argue: Would we drop the bomb again? Our surveys can’t say how future presidents and their top advisers would weigh their options. But they do reveal something unsettling about the instincts of the U.S. public: When provoked, we don’t seem to consider the use of nuclear weapons a taboo, and our commitment to the immunity of civilians from deliberate attack in wartime, even with vast casualties, is shallow. Today, as in 1945, the U.S. public is unlikely to hold back a president who might consider using nuclear weapons in the crucible of war. In other words, the American public might well demand, rather than oppose or simply tolerate, a nuclear response to a catastrophic non-nuclear attack — no-first-use pledge or not. Thus, an adversary’s doubts about a no-first-use pledge and its belief that the U.S. public may well support breaking such a pledge in response to a horrific attack could mitigate some of the deterrence risks of adopting a no-first-use policy. However, the degree to which those risks would be mitigated remains uncertain and, so far, no president has been willing to find out. Building and maintaining strong alliances has been a centerpiece of America’s effort to produce and sustain a more peaceful world. Critical to this is assuring U.S. allies of America’s commitment to their defense by extending to them the full range of U.S. military power. Many countries, including those that share a border with an adversary that presents a threat to their very existence, see no-first-use as a weakening, symbolic or otherwise, of U.S. extended deterrence. In response to Chinese provocations in the western Pacific and North Korea’s nuclear tests and missile launches, Japan regularly seeks, both in official consultations and ongoing military cooperation, assurances that America will continue to fulfill its security commitments to protect the island nation. Some in South Korea have already pressed to explore an increased U.S. nuclear presence in their country to further deter regional threats. Loss of confidence in U.S. security commitments could cause some allies to seek accommodation with regional adversaries in ways that run counter to U.S. interests. Moreover, both South Korea and Japan, similar to many NATO allies, have latent nuclear weapons capabilities characteristic of advanced industrial economies with commercial nuclear power. Any perceived wavering of U.S. security commitments could cause allies to develop and field their own nuclear weapons. Further, America’s allies have made their feelings about America adopting a no-first-use policy known. U.S. officials consulted America’s allies extensively in the lead up to the 2010 and 2018 nuclear posture reviews. This dialogue has been rich and productive and, in some ways, surprising in its candor. For example, in 2009, Japanese officials briefed the Perry-Schlesinger Commission, established by Congress to seek a bipartisan approach to the U.S. nuclear posture, on specific features and capabilities of the U.S. nuclear deterrent that Japan viewed as critical to its security. In related dialogue, many foreign counterparts to U.S. officials, including those of Japan, have urged the United States not to adopt a no-first-use policy. In light of these risks, what are the benefits of a U.S. no-first-use pledge that could offset them? Would it, as Sen. Warren claims, “[reduce] the risk of a nuclear miscalculation by an adversary in a crisis … ”? If an adversary launches a nuclear weapon because it has misinterpreted America’s actions or intentions, or even if it launches a nuclear weapon by accident, the consequences would, of course, be tragic. Such actions must be assiduously avoided with clear crisis communications, transparency, and strong negative control of nuclear weapons. But, a U.S. no-first-use pledge, by itself, is unlikely to have any effect at all in preventing such a situation from arising in the first place. Some argue that adopting such a policy would set an example and cause nuclear adversaries to follow America’s lead. If promises were kept, this would allow the U.S. conventional juggernaut to win wars absent the threat of nuclear use. But this outcome is unlikely. Indeed, several nuclear adversaries have acquired, or are currently seeking, nuclear weapons precisely to offset superior U.S. conventional capabilities. Again, quoting Tierney: “If [a President] made a dramatic announcement of no-first-use, it would probably have less impact than people think because other countries wouldn’t follow suit, especially if they’re weak.” Would U.S. adoption of no-first-use cause other countries to be more inclined to cooperate with the United States to work toward a strengthened nonproliferation regime and less likely to acquire nuclear weapons of their own? No evidence exists to support such a contention and, as noted above, allied perceptions of weakened extended deterrence could actually spur proliferation. Another purported benefit of adopting a no-first-use policy is that it might silence criticism from Non-Aligned Movement countries that periodically denounce the United States for, among other things, not having disarmed unilaterally. This is unlikely. Indeed, the enormous progress made in the decades leading up to the end of the Cold War and beyond in ending the nuclear arms race, reducing nuclear stockpiles, and eliminating other global nuclear threats has done little to moderate such rhetoric. Along these lines, some view no-first-use as a means to delegitimize nuclear weapons in general, and, more specifically, as a first step to removing from alert and eventually getting rid of the inter-continental ballistic missile (ICBM) leg of the Triad. After all, if ICBMs are not survivable unless used first, and if America’s policy becomes one of no-first-use, then why does the United States need them at all, much less on alert? This claim misrepresents both the role of America’s ICBMs and the obligations that America would be under as part of a no-first-use pledge. Thus, such arguments are unlikely to sway any president who views a nuclear Triad as an essential element of U.S. security for managing risk in a dangerous world. Many who favor a U.S. no-first-use pledge see it as a way to signal to the world a reduced role for nuclear weapons in U.S. national security. Reducing that role, and hence the likelihood that the United States would ever have to resort to nuclear use, is a laudable goal advanced in the nuclear posture reviews of the three previous presidents. But, in regard to its foreign impact, the actual security benefits that could justify accepting the risks of this policy are not well understood, nor are they quantifiable, and so far they have not tipped the scales toward the adoption of no-first-use. Those who support no-first-use as a way to advance U.S. security must explain what has changed for the better in the international security environment since 2010 that would cause this president, or this Congress, to reverse earlier presidential decisions rejecting it. It has been a precept of U.S. policy for decades that deterrence is strengthened when an adversary is unsure of the precise conditions under which the United States would employ nuclear weapons — essentially, that uncertainty breeds caution. America has made exceptions, however, in certain cases to advance concrete security interests — for example, in regard to nuclear negative security assurances provided to non-nuclear weapons states that are parties in good standing with the Nonproliferation Treaty. If the United States were to adopt a policy of no-first-use, it would present clear risks for deterrence, for regional security more broadly, and to the non-proliferation regime, while the supposed benefits of such a policy that could offset such risks are largely illusory. It is thus no surprise that since the dawn of the nuclear age presidents across party lines have rejected no-first-use. The United States should continue to do so.

# Middle East War Good---1AR

## AT: Oil Prices

### uq—prices high now

#### Oil prices high now due to Russia-Ukraine conflict

McInnes 22 [(William covers markets from Sydney including editing the Markets Live blog), “Why the price of oil matters so much to the world,” Financial Review, Mar 14, 2022, https://www.afr.com/markets/commodities/why-the-price-of-oil-matters-so-much-to-the-world-20220308-p5a2wk] // MIBF TDI

The price of oil is sitting at its highest level in more than a decade and is on the verge of hitting a new record in the wake of Russia’s invasion of Ukraine. At the end of February, the price of Brent crude spiked to $US139 a barrel, its highest level since 2008, and analysts say the price could reach as high as $US185 a barrel as countries give Russian oil the cold shoulder at a time when the market is already in short supply. Oil prices have surged off the back of Russia’s invasion of Ukraine. But why is the price of oil so important for understanding the economy? Bloomberg The price of oil is central to both global economic growth and inflation. Oil is refined into petroleum products like motor gasoline, distillate fuel oil, hydrocarbon gas liquids, jet fuel, lubricants and kerosene. Approximately two-thirds of petroleum products are consumed by transportation alone, while industrial uses, including the manufacturing of plastics and road construction materials such as asphalt, account for 28 per cent. Residential, commercial and electrical power account for the remaining 6 per cent. A surge in oil prices is reflected in the price of petrol hitting more than $2 per litre in some parts of Australia. James Brickwood During periods of high or rising oil prices, the flow-through to inflation is strong. It is most directly felt by consumers in higher fuel pump prices – the average price of unleaded petrol in Australia has now surged above $2 a litre. The higher cost of oil also affects other modes of transportation. The price of airline tickets tends to increase, as does the cost of moving goods – whether it is by truck, ship or plane. The cost of manufacturing also grows. The high price of oil acts as a driver of inflation and a curb on economic growth, as consumers are forced to spend more on filling their tanks and less on other goods and services. Why are oil prices so high? The simple answer: oil prices are high because Moscow’s invasion of Ukraine has led to sanctions against the Russian Federation, cutting off the world’s second largest oil producer from global supply chains. Countries trying to get their hands on oil elsewhere are now having to pay a premium for it. As with most commodities, the price of oil is driven largely by supply and demand. Historically, extremely high oil prices have been predominantly influenced by geopolitical tensions or war in an energy-producing country, as was the case in the 1990s when Iraq invaded Kuwait. In the 1970s, Arab nations led by Saudi Arabia put an embargo on oil exports to the US, leading to fuel shortages as crude prices quadrupled. Conversely, periods of higher production or “demand shock” – a sudden, unexpected event that temporarily changes demand for goods – cause the price of oil to fall. The price of crude dipped during the 1990s recession, the global financial crisis and the COVID-19 pandemic as economic activity plummeted. The deregulation of the US oil industry in the 1980s, including the removal of price controls and taxes on production, along with the rise of US shale production (an unconventional way of extracting oil from shale rock, which lowered drilling costs) in the 2010s also led to lower oil prices. While the Russia-Ukraine conflict is no doubt adding an extreme premium to oil prices, it doesn’t tell the whole story. Well before Russia began to ramp up pressure on Ukraine, oil prices were climbing, as the global economy emerged from its COVID-19 slumber. Production slashed during the pandemic When the pandemic struck in 2020 and businesses were forced to close and governments restricted travel, oil suppliers were forced to slash production as the global demand for oil fell. Since then, oil producers have been gradually ramping up supply but, fearful of overproducing, they have been cautious in their response, allowing demand to run ahead of their output targets. Added to that, many nations haven’t even been able to hit the targets they set, with Nigeria and Angola leading the shortfall. Both countries have blamed years of underinvestment, saying they are running out of spare capacity and already producing above sustainable levels. Further adding to that problem, increased regulation by governments moving towards climate-friendly policies and a lack of investment in fossil fuel projects has meant producers simply can’t respond as nimbly as they once did when demand surges and prices begin to rise. Who controls the world’s oil? Australia is a small player in the global oil market, producing just 350,000 barrels of oil a day, or less than 0.5 per cent of global production. Russia, on the other hand, is the second largest oil producer in the world, behind only the US, producing 13 per cent of the globe’s crude. Saudi Arabia is the third largest producer in the world but arguably carries more influence than any other country in the world given its unofficial status as leader of the 13-member Organisation of the Petroleum Exporting Countries, collectively responsible for more than a third of the world’s oil production. Between the US, Russia and OPEC, the three parties control two-thirds of the world’s oil production. But no one has moved to increase supply significantly to push oil prices lower, despite the US attempting to put pressure on OPEC to help it ease the price at the pump. The US committed to releasing just 30 million barrels of crude oil from its strategic reserve in early March, the equivalent of three days of production.  OPEC and its allies have also refused to budge,and remain committed to their plan of increasing output by just 400,000 barrels a day in April. Russia alone produces close to 10 million barrels of oil a day but is now unable to find buyers for its output, with the US and UK both committing to ban the import of Russian oil. The largest single buyer of Russian oil is China, which took in 1.6 million barrels of oil a day in 2021. It’s unlikely that China would stop its purchases, and may even ramp up its buying given the heavy discount available on Russian crude products. How high can the price of oil go? Historically, the price of Brent crude, the global benchmark for crude oil, has never gone above $US150. In July 2008, it hit a record high of $US147.50 a barrel. At the start of the week, it came close to challenging that mark with a sharp spike to $US139 a barrel. While not its central case, JPMorgan has opened the door to the price of Brent crude hitting $US185 a barrel if disruptions to Russian supply continue. China continues to buy oil from Russia and that is unlikely to change. AP But many analysts agree prices at these levels are unsustainable due to the natural erosion of demand that occurs when prices get so high. On Thursday, the price of Brent crude tumbled 11.7 per cent to $US113.01 after Ukraine announced it was ready to compromise to reach a peace deal with Russia. This suggests that in the near term it will be hard for Brent to challenge that previous record high – although, given the volatility across financial markets at the moment, nothing can be ruled out. How do I invest in oil? There are two main ways to invest in the booming price of energy. The first one is to invest directly in the commodity. The easiest way to do this is through an exchange-traded fund. ETF providers such BetaShares offers a Crude Oil Index ETF, which anyone can invest in. Investors can also trade crude oil futures or options on oil futures through an online broker, although you may need to pass suitability tests and satisfy other criteria.

#### Oil prices high now and projected to increase through 2024

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We forecast higher crude oil prices in the second half of 2023 and into 2024 in our latest Short-Term Energy Outlook (STEO) because of moderate but persistent inventory drawdowns. Inventory drawdowns take place when demand for a commodity is greater than the supply of that commodity. We expect production cuts from OPEC members and forecast higher petroleum consumption will lead to an average inventory drawdown of 0.4 million barrels per day (b/d) between July 2023 and the end of 2024.The forecast Brent crude oil price will increase to the mid-$80 per barrel range by the end of 2024, up from the June 2023 average of $75 per barrel. We forecast the West Texas Intermediate crude oil price will follow a similar path and maintain a discount to Brent of $5 per barrel. On June 4, OPEC+ members agreed to extend crude oil production cuts through the end of 2024. The cuts had previously been set to expire at the end of 2023. Following the June 4 meeting, Saudi Arabia also announced a new voluntary oil production cut of 1.0 million b/d for July and August 2023.We estimate that Saudi Arabia produced about 10% of global production of petroleum and other liquid fuels, or 10.1 million b/d, in June 2023. We forecast OPEC production of petroleum and other liquid fuels will average 33.9 million b/d in 2024, down 1.2 million b/d from the group’s 2022 peak of 35.1 million b/d.These production cuts will keep total OPEC production below the pre-pandemic five-year (2015–19) average of 36.2 million b/d and reduce OPEC’s share of world production to 33% in 2024, down from the pre-pandemic average share of 37%. We slightly increased our forecasts for world petroleum consumption in recent months, in contrast to our downward revisions in world petroleum production. In our latest forecast, we expect non-OECD consumption of petroleum and liquid fuels to grow by 1.6 million b/d from 2022 to average 55.1 million b/d in 2023 and to rise further to 56.5 million b/d in 2024. China and India lead our forecast of consumption growth. We forecast petroleum and liquid fuels consumption in China to grow by 0.8 million b/d in 2023 and by 0.4 million b/d in 2024; India’s consumption is forecast to grow by 0.3 million b/d in both 2023 and 2024. Oil prices in 2023 have been considerably less volatile than they were between 2020 and 2022. However, changes in world production and consumption could result in significant differences in oil prices than in our forecast for 2024.

#### Oil prices are high and increasing

Kelly 23 [Stephanie Kelly , (Stephanie Kelly A New-York-based correspondent covering the U.S. crude market and member of the energy team since 2018 covering the oil and fuel markets as well as federal policy around renewable fuels), 07-13-2023, “Oil prices up, hit nearly 3-month high as US inflation eases”, <https://www.reuters.com/business/energy/oil-prices-rise-early-trade-us-inflation-cools-2023-07-13/>] TDI

Data on Wednesday showed U.S. consumer prices rose modestly in June and registered their smallest annual increase in more than two years as inflation continued to subside. The data caused the U.S. dollar index (.DXY) to drop to the lowest since April 2022, which helped to boost oil prices, said John Kilduff, partner at Again Capital LLC in New York.A weaker dollar makes crude cheaper for holders of other currencies. "We've had very low inflation numbers today," said Phil Flynn, an analyst at Price Futures Group. Fears that the Federal Reserve was going to raise interest rates had posed a headwind to oil, he said. Markets expect just one more rate rise. Higher rates can slow economic growth and reduce oil demand. Oil prices have rallied by over 11% in two weeks, primarily in response to supply cuts from top producers Saudi Arabia and Russia, said Craig Erlam, senior market analyst at OANDA.The futures contract structure of the global benchmark Brent indicates the market is tightening and that OPEC could be succeeding in its mission to support the market. The premium of a front-month Brent contract to a six-month February 2024 contract rose to $2.64 a barrel on Wednesday. At the end of June, the front-month contract was at a discount to the six-month contract. A report by the International Energy Agency (IEA) on Thursday predicted oil demand would hit a record high this year, though broader economic headwinds and interest rate hikes meant the increase would be slightly less than previously anticipated. An OPEC report also published on Thursday maintained an upbeat world oil demand outlook despite economic weakness. It raised its growth forecast for 2023 and predicted only a slight slowdown in 2024, with China and India expected to keep driving the expansion in fuel use. In China, however, momentum in the post-pandemic recovery slowed, with exports contracting last month at their fastest pace since the onset of the pandemic three years ago, the country's Customs Bureau showed. Reporting by Stephanie Kelly in New York; Additional reporting by Natalie Grover in London, Jeslyn Lerh in Singapore and Laura Sanicola in Washington; Editing by Jacqueline Wong, Elaine Hardcastle, Barbara Lewis, Conor Humphries, Jan Harvey and David Gregorio.

#### Companies are currently cutting oil production

**Disavino 23** [(Scott Disavino, Reuters Energy Correspondent specializing in North American natural gas and power ) "Oil prices up 3% to 9-week high on supply concerns,", Reuters, https://www.reuters.com/business/energy/oil-prices-steady-rate-hike-fears-offset-signs-tightening-supply-2023-07-07/, 1-4-2012] TDI

Oil prices **climbed about 3%** to a nine-week high on Friday as supply concerns and technical buying outweighed fears that further interest rate hikes could slow economic growth and reduce demand for oil.

Brent futures **rose $1.95, or 2.6%,** to settle at $78.47 a barrel, while U.S. West Texas Intermediate crude (WTI) **rose $2.06, or 2.9%,** to settle at $73.86.

That was the highest close for Brent since May 1 and WTI since May 24. Both benchmarks ended up about 5% for the week.

"We're knocking on the door of a major breakout to the upside. I think you're seeing some short covering here today ... because a lot of people have been betting on the short side, said Phil Flynn, an analyst at Price Futures Group.

After two months of price consolidation between roughly $73-77, Brent moved into technically overbought territory for the first time since mid April.

"The rally over the last week or so ... has been quite strong and backed by momentum - as well as **fresh cuts** from Saudi Arabia and Russia," said Craig Erlam, a senior market analyst at OANDA.

Top oil exporters [Saudi Arabia and Russia](https://www.reuters.com/business/energy/saudi-arabia-will-extend-voluntary-cut-1-million-bpd-august-spa-2023-07-03/) announced fresh output cuts this week **bringing total reductions** by OPEC+, the Organization of the Petroleum Exporting Countries (OPEC) and its allies, **to around 5 million barrels per d**ay (bpd), or about 5**% of global oil demand**.

"OPEC+ production cuts are **expected to tighten the market**, driving supply deficits in the second half of 2023, **supporting higher oil prices**," analysts at U.S. financial services company Morningstar said in a note.

OPEC will likely maintain an [upbeat view on oil demand](https://www.reuters.com/business/energy/opec-upbeat-over-2024-oil-demand-outlook-despite-slowdown-2023-07-06/) growth for next year, sources close to OPEC said.

Russia's latest pledge to reduce oil exports will not require a similar cut in production, a government source told Reuters.

Oil analytics firm Vortexa said there are currently 10.5 million barrels of [Saudi crude](https://www.reuters.com/business/energy/saudi-crude-floating-off-egypts-ain-sukhna-halves-105-mln-bbls-vortexa-2023-07-07/) in floating storage off the Egyptian Red Sea port of Ain Sukhna, down by almost half from mid-June.

In the U.S., energy firms this week added oil and natural gas rigs for the first time in 10 weeks, due to the biggest weekly increase in gas rigs since October 2016, according to energy services firm Baker Hughes Co [(BKR.O)](https://www.reuters.com/markets/companies/BKR.O).

In Norway, Equinor ASA [(EQNR.OL)](https://www.reuters.com/markets/companies/EQNR.OL) **paused production** at its Oseberg East oil field in the North Sea due to staffing shortages.

In Mexico, six people were injured after a fire broke out on Friday morning at an offshore platform run by state oil company [Pemex](https://www.reuters.com/world/americas/fire-breaks-out-pemex-offshore-platform-cantarell-complex-source-2023-07-07/) in the Gulf of Mexico.

Also supporting crude prices, the [U.S. dollar](https://www.reuters.com/markets/currencies/dollar-steadies-us-economy-stays-resilient-eyes-nonfarm-payrolls-2023-07-07/) [(.DXY)](https://www.reuters.com/markets/quote/.DXY), fell **to a two-week low** after data showed [U.S. job growth](https://www.reuters.com/markets/us/slower-still-strong-us-job-growth-expected-june-2023-07-07/) was lower than expected but still strong enough to likely lead the U.S. [Federal Reserve](https://www.reuters.com/markets/us/feds-goolsbee-golden-path-includes-couple-rate-hikes-2023-07-07/) (Fed) to resume raising interest rates later this month as it has signaled.

A weaker dollar makes crude cheaper for holders of other currencies, which could **boost oil demand.**

According to the CME Group Inc's [(CME.O)](https://www.reuters.com/markets/companies/CME.O) FedWatch Tool, the probability that the Fed increases interest rates by 25 basis points at its July 25-26 meeting is now around 95%, up from 92% just prior to the data coming out.

Higher borrowing costs could slow economic growth and reduce oil demand.

In Europe, decades-high inflation and the impact of war in Ukraine has forced companies to impose **hiring freezes and**[**lay-offs**](https://www.reuters.com/markets/europe/european-companies-cut-jobs-economy-sputters-2023-06-23/)**.**

#### Oil prices are currently rising as OPEC cartel looks to cut production

**Tepper 23** [(Taylor, Taylor Tepper is lead editor for banking at USA Today Blueprint and is an award-winning journalist and former senior staff writer at Forbes Advisor, Wirecutter/New York Times and Money magazine. His work has also appeared in Fortune, Time, Bloomberg, Newsweek and NPR) "Why Is The Price Of Oil Rising?," Forbes Advisor, 2-16-2023, https://www.forbes.com/advisor/investing/high-oil-prices/] TDI

A [gallon of gas costs $3.83](https://www.forbes.com/advisor/personal-finance/gas-prices-by-state/) today, **up about $0.05** over the past month, **reversing** a months long trend of declining prices after hitting record highs of $5 a gallon earlier this summer.

The pump price may be inching up even further after OPEC+ agreed to **reduce oil production by 2 million barrels a day**, the first proposed target reduction since the Covid-19 pandemic. Why now? The organization is likely **looking to raise oil prices** in the face of **slowing** global **economic** growth.

The move comes as OPEC+ is **already producing less** than its target amount. A barrel of WTI crude oil was almost $88 a barrel after the move was announced, **an 11% increase** since the end of September.

“On the bearish side, one could say that an OPEC+ cut is a signal that there are meaningful concerns around global oil demand and an increase in OPEC+ spare capacity takes some of the scarcity premium out of the price,” said Noah Barrett, research analyst for energy & utilities at Janus Henderson Investors. “On the bullish side, one could say that OPEC+ is signaling a **strong desire to support** oil prices…and any oil supply coming off the market is a positive for **higher prices**.”

A production cut by OPEC and its Russian ally is just another blow for global energy consumers, piled atop the **sanctions** imposed on Moscow by many western countries after Russia’s unprovoked invasion of Ukraine.

#### OPEC cartel increases oil prices by more than 7%

**Guardian 23** [(Guardian) "Why are oil prices rising and what does it mean for inflation?,", The Guardian, 4-1-2023, https://www.theguardian.com/business/2023/apr/03/why-are-oil-prices-rising-opec] TDI

The reason oil prices jumped by **more than 7%** in early London trading was that members of the Opec+ cartel agreed a [surprise cut](https://www.theguardian.com/business/2023/apr/03/oil-price-surges-after-surprise-opec-production-cut) in **production** over the weekend. The move, led by Saudi Arabia, will take effect next month and will **reduce** the supply of crude by more than **1m barrels a day**. All other things being equal, limiting supply of oil leads to an increase in its price, and that explains why a barrel of Brent crude – one of the benchmarks for the market – hit nearly $86 a barrel.

This looks like a **pre-emptive move** from the cartel ahead of a likely economic slowdown – and possible recession in the US – later this year. Opec+ said its decision was aimed at **ensuring stability in the oil market**, by which it means putting a floor under oil prices of about $80 a barrel. Even so, the production cut represents a gamble that stronger demand from China – where the economy is recovering from its strict lockdown – will offset the dampening effect on demand in the west. It is a sign of the cooling of relations between Washington and Riyadh that the Saudis went ahead with their voluntary production cut despite strong opposition from Joe Biden’s administration.

### turn--high oil prices bad

#### High oil prices cause regional instability, arms races, and slow growth

Jaffe and Elass 15 [Amy Myers Jaffe and Jareer Elass, (Amy Myers Jaffe is a leading expert on global energy policy, geopolitical risk, and energy and sustainability. Jaffe serves as executive director for Energy and Sustainability at University of California, Davis with a joint appointment to the Graduate School of Management and Institute of Transportation Studies (ITS). At ITS-Davis, Jaffe heads the fossil fuel component of Next STEPS (Sustainable Transportation Energy Pathways) Fall/Winter 2015, “War and the Oil Price Cycle”, <https://www.jstor.org/stable/pdf/jinteaffa.69.1.121.pdf?refreqid=excelsior%3A49028a048f6e610b5028bed3aacf1ca3&ab_segments=&origin=&initiator=&acceptTC=1>] TDI

Complex rivalries for influence among regional powers, most notably between Saudi Arabia and Iran but also including Turkey, Qatar and the United Arab Emirates, are transforming the Middle East. As local borders and ruling institutions have become contested in the aftermath of the Iraq War and the Arab Spring, so has control of the region’s major oil and gas facilities. Warring militias, the Islamic State of Iraq and Syria (ISIS), Al Qaeda and traditional governments are increasingly focusing on maintaining or gaining control of oil production and refining installations. Additionally, regional conflicts, now complicated by the active military involvement of Russia, have spilled over to affect global oil markets as Saudi Arabia and its Gulf allies, seeking to influence regional military and geopolitical outcomes, have initiated a market share war that has brought about a collapse in oil prices. This paper examines how conflicts in the Middle East, including the Syrian civil war and the rise of ISIS, are shifting the geopolitics of oil. These conflicts are raising serious new risks to regional oil facilities, making them both strategic assets and spoils of war. Current diplomacy to resolve the conflict in Syria faces serious challenges. In addition to humanitarian grounds, it is imperative to find a durable solution in order to prevent the continued destruction of major regional oil and gas production and export facilities. The ongoing destruction of such infrastructure may represent a major challenge to global energy security in the three to five year time frame. Oil has shaped international conflict for decades. According to one estimate, twenty-five to fifty percent of interstate wars between 1973 and 2012 had oil-related linkages. 1 But the cyclical nature of oil’s contribution to global conflict is not well understood. Not only are oil prices cyclical, but the geopolitics of oil are linked inexorably to the same boom and bust price cycle. Military adventurism, proxy wars and regional pathologies in the Middle East expand and contract with the ebb and flow of massive petrodollar accumulations related to the oil price cycle. The massive inflow of petrodollar revenues when oil prices are high creates disposable incomes that can be easily dispensed on regional arms races, especially since oil consuming countries like the United States are incentivized to increase arms sales as a means of solving oil import related trade deficits. Besides transferring wealth from industrialized countries to oil producers in the Middle East and North African (MENA) region and Russia (and stimulating renewed drilling for oil and gas in North America), high global oil and natural gas prices also slow global economic growth and encourage energy conservation. This causes petroleum demand to slow globally, lowering oil prices. Social and political problems in the region reemerge as oil prices recede. Regional governments have fewer resources to spend on restive populations that have become accustomed to generous handouts enabled by high oil prices. Job creation and visible social programs slow, dissatisfaction rises, and the consequences of economic downturns incite support for militants. Ensuing instability forces governments to use newly purchased arms, which ironically begins the cycle yet again, as new conflicts disrupt oil supplies.

## AT: Russia

### uq—econ low now

#### Russia’s economy is down now and worsening

Tayeb 7/ 16 [ Zahra Tayeb covers markets at Insider where she regularly writes about stocks, commodities, currencies and crypto. She previously covered business news, reporting on the global space industry, tech, retail and healthcare. Prior to joining Insider, Zahra worked as an Editorial Intern at Wonderland Magazine. Previously, she was a freelance journalist for Women's Wear Daily and has interned for magazines and international broadcast news organisations including Condé Nast Traveller and BBC.Zahra is a graduate of King's College London “Russia's economy has gone from bad to worse in a matter of months. Here's where the country is feeling pain the most. Jul 16, 2023, 3:30 AM PDT https://markets.businessinsider.com/news/currencies/russia-economy-worsens-current-account-ruble-energy-exports-2023-7] MIBF TDI

Russia's economy is going from bad to worse as Western sanctions hammer the country's key sectors. From slumping car sales to a plunging Russia ruble, the problems Russia faces keep on growing. Here are key signs showing how Moscow's economy is spiraling. Russia's economy just keeps getting worse – and there are plenty of ways to show that. From plunging car sales to a dramatic collapse in its current-account surplus, there's no way to hide Moscow's troubles. The country's economic woes have multiplied since its invasion of Ukraine early last year. The conflict has triggered a wave of sanctions from the Western world. Some have even blamed Russian President Vladimir Putin for inflicting so much pain on the nation, with Yale researchers saying he's "cannibalizing" Russia's economy in his urge to conquer Ukraine. "The lion's share of the economy is controlled by the state, the energy and financial sectors, and Putin is taking from the seed capital of those businesses to use as a cookie jar for his war chest," researchers Jeffrey Sonnenfeld and Steven Tian said. Russians are buying fewer cars Russia's car industry is one part of the economy that's being squeezed. Insider's Phil Rosen reported that car sales in Moscow have tanked by nearly 75% since the Ukraine war broke out. The decline has been fueled by a mix of three factors: soaring prices, decreasing supply, and deteriorating consumer sentiment. "Russians are just buying less cars, period," Tian said. "That speaks to the weakness of the consumer in Russia. This is as close to a proxy to deteriorating consumer sentiment as there is, and the story it tells is profoundly distressing. Russians just aren't spending money." At the same time, the number of Russians buying foreign-branded cars – typically viewed as luxury purchases – has neared a standstill. Instead, consumers are buying locally sourced cars, many of which are riddled with mechanical issues. Plunging exports Another sign that Russia's economy is flailing is the dramatic collapse in its current-account balance. Moscow's central bank posted a 93% year-on-year drop in its current-account surplus for the April-June quarter. it fell from a record $76.7 billion to $5.4 billion. The rough financials show how badly Western sanctions are biting the country, particularly its key energy sector where its oil-and-gas exports have taken a huge hit after price caps and bans were imposed. Energy export revenue Moscow garners a big chunk of its revenue from sales of oil and gas products, but Western penalties have eroded that income stream. In June, Russia's Finance Ministry said that revenue from oil-and-gas taxes fell 36% compared to a year ago to about 571 billion rubles, and that profits from crude and petroleum products tumbled 31% to 426 billion rubles. Ruble in freefall Adding to Russia's troubles is a tumbling ruble. The country's currency slumped to a 15-month low of 94.48 against the dollar earlier in July, triggered by capital flight, shrinking tax revenues, and declining central-bank reserves. "The ruble doesn't have anywhere to go but down," Konstantin Sonin, a University of Chicago economist, said in a tweet. Concerns about the currency's volatility have prompted a wave of domestic withdrawals from the country's central bank, amounting to over $1 billion. The bank run was mainly fueled by the recent Wagner revolt. Russia's weakening currency has forced the country to take desperate measures. Recently, Russia's foreign minister urged Southeast Asian countries to dump the dollar and use local currencies to conduct trade.

### defense—Russia/Ukraine war

#### Putin can’t use nukes

Holloway 22[(Senior Foreign News Reporter Henry is an award winning reporter who joined The Sun in March 2020. He got his start in journalism at The Brighton Argus in 2014, before moving to The Daily Star in 2016 where he was eventually appointed Chief Reporter. He moved over to The Sun to focus his reporting on world news - covering everything from the war in Ukraine, the search for Covid's origins , and the crimes of Jeffrey Epstein), “BIG RED BUTTON Lunatic Putin WON’T be able to launch nuclear weapons – and I know why, says ex-US General,” The Sun, 21 Oct 2022, https://www.thesun.co.uk/news/20167030/vladimir-putin-nuclear-generals-stopped/]//MIBF TDI

VLADIMIR Putin could be thwarted in an attempt to fire a nuclear weapon by his own military leaders, said former military chiefs. Russia is dangling the threat of nukes over their disastrous war in Ukraine even as they are beaten back across the frontline. 4Could Vladimir Putin's generals turn on him and stop a nuke launch? 4 Putin is always accompanied by a nuclear briefcase known as 'The Cheget' But two senior former Western military chiefs believe that it will never get that far - with Putin likely to be thwarted from such a mad move by his own chain of command. US Lt. General Ben Hodges - the former commander of US Army Europe, who is now retired - believes that Vlad's orders could be overturned by cooler heads. And his view is shared by retired British Army officer Colonel Richard Kemp, who said Putin would "have a problem". It is feared the more storming progress the brave Ukrainians make - the more Putin faces being boxed into a corner as his own future is now tied to the war's success or failure. And one of the final options he has left in his arsenal is to unleash a nuclear weapon - whether as a test launch or used in a tactical setting on the battlefield. Exploding a nuke in wartime hasn't occurred since the Americans dropped two bombs on the Japanese to end World War 2. Western nations could face being further drawn into the war by such a gambit - further heightening the prospect that Putin's aggression could spiral into World War 3. But while the increasingly paranoid and disconnected Vlad may seek press the nuclear button - there are those within the Russian war machine who could undermine him. Both General Hodges and Colonel Kemp agreed there is very little battlefield advantage to be gained by using a tactical nuke - small yield weapons designed to be used on the frontline. And while it would likely have a psychological impact, it would simply serve to cauterise international condemnation against him and further support for the Ukrainians. Russian nuclear strikes have to be officially signed off by Putin, who uses a small briefcase known as "The Cheget" - Vlad's equivalent of the US President's so-called "nuclear football". The case however does not contain a launch button - but instead transmits launch orders to The General Staff. And then this cadre of senior officers, headed by General Valery Gerasimov, has to make the arrangements for the nuclear strike. They then transmit authorisation codes to the individual weapons commanders. So there are multiple levels of military brass Putin's orders have to pass through before the nuke launches. General Hodges told The Sun Online: "What I see is the [Russians] thinking, 'to what advantage do we get? None'. That is why I think the people around Putin are saying 'why would we do this?', and I believe there are people around him who are planning for 'life after Putin' General Ben Hodges "It won't change the conditions on the battlefield that would cause the Ukrainians to stop - there are massed in a place where a huge part of their forces can be destroyed." He went on: "The Russian General Staff is professional enough to know that if they use a tactical nuclear weapon - it would be impossible for the US to not become further involved. "So when you think about if there is no battlefield advantage, you only get the downside. "That is why I think the people around Putin are saying 'why would we do this?', and I believe there are people around him who are planning for 'life after Putin'. "Are they really prepared to deal with an American or Western response?" General Hodges said he believes Russia would face "painful" and "decisive" response from the West if Putin opts to use nukes. "It will show them, 'there is more where this came from, do not do it again'," the general told The Sun Online. He added: "[Putin] would need the entire General Staff to go along with this - and I am not convinced that is likely." It was reported this week the US and UK fear that Putin could attempt to detonate a nuclear weapon over the Black Sea. And its feared such a blast - even in a remote area - could still have wide ranging consequences. Colonel Kemp told The Sun Online however he believes someone in the Russian chain of command would be able to stop Putin. "Even if he decides he is right in a corner and has no other options and wants achieve something by nuclear release, I think he might find he is up against a problem with the chain of command," he said. "It is not just him who has the final say - there are about five levels of people who have to go along with it. “Its quite possible among those five there are people who won’t go along with it. "I would hope the West has been working on those individuals to try and persuade them this is not the right way to go.” Colonel Kemp - who was the commander of British forces in Afghanistan - believes this means Putin's use of a nuke is now "less likely, than more likely". But he did warn the West must still take Vlad's threats "seriously". He also pointed out that if Putin does decide to use tactical nukes likely will not have a major impact on the frontline. And the colonel added Russia's use of a nuke in Ukraine could also see their already dwindling support from Putin's traditional ally China be further collapse. Russia has been dangling the threat of nuclear weapons over Ukraine as its forces continue to be pushed back. Moscow has red lines in its doctrine about when to use nukes - but they are softer than those in the West. It is widely understood the current nuclear threats are referring specifically to smaller, tactical weapons designed for battlefield use rather than massive city-killing bombs. Russia is thought to have around 2,000 nuclear weapons in their arsenal in the form of small yield missiles, torpedoes and artillery shells. Moscow's war doctrine is believed to be open to using nuclear weapons in a conventional conflict as an intimidation tactic - and use of such a weapon must be signed off personally by Putin. Putin's commanders believed they could roll over Ukraine in a matter of days - but now the war has been raging for eight months. The tactic became known as "escalate to de-escalate". They convinced Russia troops they would be greeted with cheers and waving flags as "liberators", instead they were faced with Kalashnikovs and molotov cocktails as invaders. Putin's war has become a slow and brutal quagmire - one which has seen the Russians change tactics, moving from attempts at surgical strikes to savage, indiscriminate attacks on civilians. With further defeats on the horizon, a seemingly hopeless mass mobilisation, and a resurgent Ukraine storming towards their new "territory" - stoking fears the war could escalate once again.

#### Russia won’t escalate to nuclear use

Stein 22 [(Aaron, Director of Research at the Foreign Policy Research Institute (FPRI)), “Ukraine and a Guide To Avoiding World War III,” Texas National Security Review 3/3/2022 <https://warontherocks.com/2022/03/ukraine-and-a-guide-to-avoiding-world-war-iii/>] MIBF TDI

After a few days, the Russian invasion of Ukraine has stumbled amid reports of low troop morale and poor logistics. The bungled Russian invasion has given space for different European countries t[o increase lethal assistance](https://www.politico.eu/article/eu-ukraine-russia-funding-weapons-budget-military-aid/) to the Ukrainian government, but this raises the risk of escalation beyond Ukraine. Such overt assistance has prompted Moscow [to warn](https://twitter.com/m_suchkov/status/1497961761554710531) that it would strike any arms convoys inside Ukrainian territory, presumably with airstrikes near the Ukrainian-Polish border. There is a non-trivial risk of conventional escalation that could turn a contained, regional conflict into a much larger regional war. The United States and Europe ought to take action to reduce these risks even as they supply Ukraine with lethal and non-lethal supplies. The West cannot afford to be sanguine about the increased risk of direct conflict with Russia. The United States and its NATO allies are also flying in close, daily contact with the Russian and Belarusian air forces while NATO troops are deployed in [Poland and Romania](https://www.airforcemag.com/u-s-jets-deployed-to-poland-romania-prepared-to-scramble-in-support-of-nato-baltic-air-policing/). Additionally, the primary route for Western weapons to reach Ukraine is via Poland. Western policymakers would be wise to consider that Russian aerospace forces may bomb convoys entering Ukraine from Poland, raising the possibility that they or their munitions could strike targets just outside the border, or even cross into Polish airspace. And as the war moves west, Russian fighters could pursue Ukrainian aircraft fleeing the conflict and, perhaps, violate Polish air space. Hot pursuit of aircraft over international borders invites retaliation, potentially bringing NATO and Russian forces into combat. As such, policymakers ought to be clear and deliberate about how to manage potential escalation spirals. While both sides have professional militaries that are governed by rules managing these interactions, NATO air forces will almost certainly be operating in ever-closer proximity to Russian aircraft, at the very least. The airspace surrounding Romania and Poland is [already congested](https://breakingdefense.com/2022/02/us-russia-should-establish-deconfliction-line-for-air-operations-over-the-black-sea-now/), with different NATO forces patrolling over the Black and Baltic Seas, as well as in the tri-border area between Belarus, Ukraine, and Poland. To complicate matters further, Ukrainian air assets have fled to [Poland and Romania](https://militarywatchmagazine.com/article/one-of-ukraine-s-top-fighters-fled-to-romania-as-russia-dominates-skies-what-will-happen-to-the-runaway-su-27). This means that Soviet-designed aircraft are flying at NATO members’ borders, which requires NATO air forces to identify them and escort them to an appropriate air base. As of now, Russian fighters are not pursuing these aircrafts, perhaps because they have not gained air superiority over Ukraine and are not patrolling in the far west of the country. If the conflict was to escalate or were NATO to decide to reassess its aims and rules of engagement — perhaps in response to Russian forces pushing westward after taking or encircling Kyiv, driving a tide of fleeing refugees before them — things could get much more dangerous. The risk of spillover from the conflict is an urgent topic for discussion precisely because it could lead to a war involving up to four nuclear-armed powers: Russia, the United States, France, and the United Kingdom. President Vladimir Putin has already put his nuclear forces on [“a special mode of combat duty”](https://www.economist.com/europe/2022/02/27/with-his-war-going-slowly-vladimir-putin-raises-the-nuclear-stakes) in an attempt to coerce the Western powers. This order has puzzled observers of Russian nuclear forces, but the signaling appears to be designed to warn NATO to stay out of the conflict, something Biden has pledged to do, rather than signal Moscow’s willingness to use nuclear force first. While the threat of a nuclear exchange is low, the United States and Europe must grapple with the secondary challenges of military support for Ukraine. Russian warnings have suggested that it intends to limit actions to Ukraine, while the Biden administration [has insisted](https://www.buzzfeednews.com/article/caitlinhernandez/biden-us-troops-russia-ukraine) it will not send troops into the conflict. The line, however, is becoming increasingly blurred with the increasing pledges to support the Ukrainian armed forces. Foreign supplied man-portable weapons are already tearing into Russian supply lines and [killing Russians](https://www.nbcnews.com/investigations/frustrated-putin-may-order-escalation-violence-ukraine-us-officials-sa-rcna18026) in numbers larger than what the Kremlin may have accepted before the invasion, and the networks being set up to supply these weapons could easily be used to support a Ukrainian insurgency indefinitely. How will Moscow react once these arms flows from Poland turn from trickles to torrents, or kill Russian soldiers tasked with patrolling conquered urban areas? NATO aerial patrols over Poland are well within the engagement zone of Belarusian surface-to-air missiles. In the event of increased tensions, Belarus, under instructions from the Kremlin, could use its surface-to-air missiles to harass NATO fighters, or consider trying to interfere by jamming aircraft. The other, and perhaps most likely, pressure point will be on the supply convoys from Poland into Ukraine. In Syria, Russia used tactical bombers [to strike weapons and food supplies](https://www.atlanticcouncil.org/blogs/syriasource/how-russia-beat-turkey-in-syria/) from Turkey, as part of its siege campaign of Aleppo. This tactic led to Russian bombing directly on the border. In the air, Russian fighters would also [use aggressive tactics](https://www.bloomsbury.com/us/us-war-against-isis-9780755634828/) to warn away coalition fighters during times of tension (often with little effect), as well as Turkish Air Force fighters patrolling near the border. If the war drags on, and Western supplies do start to make it into the country in larger numbers, NATO should expect Ukrainian-driven convoys with Western aid to be bombed. Russia has pledged to do this, and it would be wise to take Putin seriously. The Russian strategy now, it seems, is to mass forces to besiege Ukrainian cities. As part of this strategy, one should assume Moscow will attempt to cut weapons supplies to Ukraine, even if those supplies come from Poland. The Russian military has performed poorly in Ukraine, but there is little reason to doubt that Moscow can use mass to overcome challenges and take terrain from the Ukrainian military. If this were to happen, Russian military forces could soon [link](https://warontherocks.com/2022/02/interpreting-the-first-few-days-of-the-russo-ukrainian-war/) different fronts in the south and east, besiege Kyiv, and be in a position to expand the war in the western part of the country. This reality, while unsettling, requires that the United States and NATO think through the risks of increased Russian activity on the Ukrainian-Polish border. To manage this risk, the United States and NATO should announce that no member-state’s territory will be used to launch attacks against the Russian armed forces. The two sides should also continue to push for increased transparency about air operations on the border with Belarus, decreasing the risk of miscalculation on the border. Finally, the United States and Europe should decide how to respond if convoys are bombed. The easiest answer is [to do nothing](https://warontherocks.com/2017/12/in-defense-of-nothing/). However, the pressure to do “something” to protect these convoys is likely to grow, leading to pressures on leaders to extend some sort of protection to aid and weapons convoys that enter Ukraine, even when any such action could be escalatory. The Russian invasion of Ukraine has gone poorly thus far, but the correlation of forces still slants heavily in Moscow’s favor. And Putin will likely increase the brutality of his campaign, substituting mass for operational cleverness in his effort to subdue Ukraine. The West needs to be prepared for this fact, and the potential that the war will move westward. If Putin chooses this course of action, bringing the two sides into far closer contact, it will be important to manage force-on-force friction to keep the conflict limited and to ensure that it does not spill over into Europe. The United States and NATO can manage escalatory risks, but it is important to think clearly about what is at stake, proactively increase transparency with Moscow about certain NATO actions in Poland, and [explore a clear deconfliction mechanism](http://www.apple.com/) to manage flights in certain air corridors. The West has stood remarkably united in the face of Russian aggression, but all parties involved should be thinking about how to manage spillover from what may turn out to be a longer and bloodier war than Moscow planned for.

#### Russia won’t lash out in the Black Sea -- previous losses, future costs, and limited capabilities

**Mongilio, 23**, [(Heather, Heather Mongilio is a reporter with USNI News. She has a master’s degree in science journalism and has covered local courts, crime, health, military affairs and the Naval Academy. ) "Russia, Ukraine in Black Sea Stalemate a Year Into Russo-Ukraine Conflict,", USNI News, https://news.usni.org/2023/02/23/russia-ukraine-in-black-sea-stalemate-a-year-into-russo-ukraine-conflict, 2-23-2023] TDI

When Russia invaded Ukraine a year ago, the Black Sea was suddenly in the spotlight.

The Black Sea, which borders Ukraine, Russia, Georgia, Bulgaria, Romania and Turkey, was a key naval area for both Russia, which has a fleet dedicated to the area, and to Ukraine, in addition to a path for grain exports from Ukraine.

Within days of the invasion, Turkey closed the Bosphorus Strait to warships, **effectively closing off the Black** Sea to any country that did not border it. The last U.S. warship left in December 2021. Russia was **left with the ships it had flowed into the region** to join its existing Black Sea Fleet.

There was some speculation that Russia could prepare an amphibious assault on Ukraine with the goal of taking over the port city of Odesa. But **the amphibious assault did not materialize**. Nor did any other large naval maneuvers. For the most part, the Black Sea has played a commercial role in the conflict, affecting grain exports from Ukraine.

Russia and Ukraine are in **a stalemate** when it comes to the Black Sea, similar to that of the land fight, said Mark Cancian, a senior advisor for the Center for Strategic and International Studies’ International Security Program.

Early on, Russia launched naval attacks, taking Snake Island from the Ukrainians. The Ukrainians responded, eventually recovering the island and **sinking** the guided-missile cruiser RTS **Moskva** (121). But since then, there has been little maritime activity.

Russia was able to launch a small amphibious assault on Mariupol, a smaller port city, which saw heavy fighting early in the war. However, a larger assault on Odesa was not likely. Russia’s Black Sea Fleet has **smaller amphibious ships, limiting** how the troops and equipment they are able to carry, Cancian said. While [WHO???] speculated an amphibious assault on Odesa was imminent, , Russia **didn’t indicate it planned** to launch one, Cancian said.

“You could say that they were deterred from doing raids, but the big amphibious operations were just never within the military capability, and there’s no indication that they thought about it either,” he said. “It’s not the Russian style.”

Brad Martin, director of Institute for Supply Chain Security with the RAND Corporation, said he had expected more activity around the Black Sea.

Neither Ukraine nor Russia needed the Black Sea for resupply, Martin, a retired Navy captain, said. Although the Black Sea could have been a potential choke point, it **did not pan out that way** in the current conflict.

There have been other naval elements in the conflict. Early into the invasion, Ukraine scuttled its flagship frigate to prevent the Russians from taking it.

Russia’s Black Sea Fleet continues to maintain a presence in the waters, although the ships have largely been in port in Sevastapol or Novorossiysk.

Black Sea Fleet ships are Kalibr-cruise missile capable, and there is evidence that bombardment on cities like Kherson have involved missiles shot from the Black Sea.

Missiles coming from the Black Sea Fleet add another element for Ukrainians to worry about, Martin said, although even without the ships, Russia would have enough ways to fire upon its neighbor.

Russian Black Sea Fleet ships **have stayed closer to their ports**, especially after Ukrainian troops used Neptune missiles to sink Moskva in a strategic and moral victory. When Russia captured Snake Island in February 2022, a Ukrainian service member there radioed “Go fuck yourself” to the Moskva. The soldier was released in a prison swap a month later and was awarded a medal for his service.

Ukraine sank Moskva in April.

Russia has lost other ships, Cancian said, including a supply ship heading to Snake Island in July and a landing ship in March.

“The bottom line is that **Russia learned a lesson** about the power of anti-ship missiles and has backed away as a result of those two experiences,” he said.

It also showed the dangers of having a presence in the Black Sea, Martin said. If Russia had been considering an amphibious assault, **Moskva’s sinking showed it would be difficult and expensive.**

“And I think what essentially did was take a seaborne threat to Ukraine out of the equation,” Martin said.

Moskva had also played a role in the Russian’s control of the Black Sea in the beginning of the war by preventing Ukraine from exporting grain, said Sal Mercogliano, chair of Campbell University’s Department of History, Criminal Justice and Politics. **When it sank, so did Russia’s control**.

“**They’ve really surrendered**, basically, the Gulf of Odesa to the open carriage of goods,” Mercogliano said.

#### No lashout—Russia doesn’t perceive NATO as a threat

**Dickinson** 20**23** [(Peter, editor of the Atlantic Council’s UkraineAlert service) “Russia’s invasion of Ukraine was never about NATO,” Atlantic council, https://www.atlanticcouncil.org/blogs/ukrainealert/russias-invasion-of-ukraine-was-never-about-nato/, July 18, 2023] TDI Sam

Sweden is poised to become the thirty-second member of the NATO Alliance and Russia does not appear to be at all concerned by the prospect. The breakthrough moment for the Swedes came ahead of last week’s NATO summit in Vilnius, when Turkish President Recep Tayyip Erdogan agreed to end months of opposition and back the Scandinavian nation’s bid to join the Alliance. **Russia’s response** to Sweden’s imminent NATO accession has been **muted** to say the least, with Foreign Minister Sergei Lavrov limiting himself to promises of “appropriate measures” and Kremlin spokesman Dmitry Peskov warning about unspecified “negative consequences.”

This apparent lack of concern mirrors the Kremlin position over Finland’s NATO membership, which was confirmed in April 2023. On that occasion, Russia also downplayed the significance of the news while making vague commitments to strengthen its own military posture in the region. Indeed, in the fourteen months since the two Nordic nations first announced their intention to join the Alliance, Moscow has done almost nothing to protest or obstruct this process, despite having a vast array of military, cyber, economic, informational, and diplomatic tools at its disposal. If Putin genuinely believed the NATO Alliance posed a security threat to the Russian Federation, he would at the very least have increased the Russian military presence close to the Finnish border. Instead, Russia **reportedly reduced its troop deployments in the region by approximately 80%**. These are obviously not the actions of a nation under siege. Russia’s remarkably **relaxed reaction to the NATO accession** of Finland and Sweden stands in stark contrast to the hysteria over Ukraine’s far less substantial ties to the military alliance. In the months leading up to Russia’s February 2022 full-scale invasion of Ukraine, Putin and other Kremlin leaders told the world that the escalating crisis was due to years of provocative NATO expansion, while warning that deepening ties between the Alliance and Ukraine represented a red line. In reality, however, **Ukraine** in early 2022 was **not even remotely close to joining NATO**. Far from pursuing Ukraine, the Alliance had repeatedly sidestepped appeals from Kyiv for a Membership Action Plan, refusing to offer even a clear signal regarding future accession. On the eve of Russia’s invasion, the most optimistic forecasts indicated that Ukraine’s dream of joining NATO was still decades away.

It is hard to see any military logic behind the dramatically different Russian reactions to NATO’s Nordic enlargement and the Alliance’s involvement in Ukraine. After all, while a theoretical future NATO presence inside Ukraine could pose a range of major headaches for military planners in Moscow, the recent accession of Finland has already doubled the length of Russia’s shared border with the Alliance overnight. Swedish membership will arguably be even more consequential for Russia, transforming the Baltic Sea into a NATO lake. If Russia is so apparently **unconcerned** by these very real military challenges, why was Putin prepared to launch the biggest European war since World War II over the far more distant prospect of Ukrainian NATO membership?

It is clear from Putin’s own actions that he understands perfectly well **NATO will never attack Russia**. This should come as no surprise. Indeed, the entire notion of NATO invading Russia is recognized as absurd by all but the terminally swivel-eyed. This does not mean Russian objections to NATO’s post-1991 enlargement are entirely insincere; on the contrary, the growing presence of the Alliance in the former Eastern Bloc over the past thirty years is perhaps the leading source of geopolitical bitterness and resentment throughout the Russian establishment. However, it is critical to clarify that this indignation **has nothing to do with legitimate security concerns**. NATO is not a threat to Russian security; NATO is a threat to Russian foreign policy because it prevents Russia from bullying its neighbors. In other words, NATO enlargement is no more or less provocative than a burglar alarm is to a thief.

None of this has prevented Putin from using the **NATO issue as a smokescreen** for his imperial ambitions. For years, he has skillfully exploited anti-Western sentiment and widespread international suspicion of US foreign policy to distract from Russia’s own acts of international aggression. This tactic has proved remarkably successful; in the seventeen months since Russian troops began the full-scale invasion of Ukraine, a wide range of academics, commentators, and politicians around the world have all echoed Putin in blaming NATO for provoking the war. They have continued to do so even as **Putin himself has compared his invasion to the imperial conquests** of eighteenth-century Russian Czar Peter the Great.

The fact that so many prominent personalities remain ready to accept Russia’s dishonest NATO narrative is evidence of fundamental misconceptions regarding the role of the Alliance and the nature of its post-Cold War enlargement. NATO is routinely depicted by critics as an expansionist military institution seeking to impose Western dominance, but this is entirely at odds with the growth of the Alliance over the past three decades. Nobody has ever been forced to join NATO; instead, every single new member since 1991 has asked for membership and has been obliged to meet a series of strict standards in order to qualify. Indeed, the loaded term “NATO expansion” may itself be misleading, as unlike Russia, the Alliance only ever expands on a voluntary basis. It is also worth underlining that while Putin plays the victim card and complains of being encircled, fear of Russian aggression has been by far the leading cause of all new membership applications.

With Russia’s invasion of Ukraine now approaching the one-and-a-half-year mark, it **is time to retire the NATO narrative**. **Putin** has demonstrated that he is **not at all threatened** by the growing presence of the Alliance on Russia’s northwestern border, and is increasingly open about his imperial agenda in Ukraine. It is this Russian imperialism that poses a grave threat to international security, not the defensive guarantees offered by NATO.

#### Russia’s rational—the US overblowing threats causes escalation

Carpenter 18 [(Ted Galen, Ted Galen Carpenter, a senior fellow in defense and foreign policy studies at the Cato Institute and a contributing editor at the National Interest, is the author of 10 books, the contributing editor of 10 books, and the author of more than 700 articles on international affairs.) “Russia Is Not the Soviet Union,” National Interest, <https://nationalinterest.org/feature/russia-not-soviet-union-27041?page=0%2C1>, 7-28-2018] TDI

The American public and U.S. policymakers both have an unfortunate tendency to conflate Russia with the Soviet Union. That habit emerged again with the media and political reaction to the Helsinki summit between President Trump and Russian President Vladimir Putin. Trump’s critics accused him of appeasing Putin and even of committing treason for not doing enough to defend American interests and for being far too solicitous to the Russian leader. They regarded that as an unforgivable offense because Russia supposedly poses a dire threat to the United States. Hostile pundits and politicians charged that Moscow’s alleged interference in the 2016 U.S. elections constituted an attack on America akin to Pearl Harbor and 9-11. Trump’s supplicant behavior, opponents contended, stood in shameful contrast to the behavior of previous presidents toward tyrants, especially toward the Kremlin’s threats to America and the West. They trotted out Ronald Reagan’s “evil empire” speech and his later demand that Mikhail Gorbachev to tear down the Berlin Wall as examples of how Trump should have acted. The problem with citing such examples is that they applied to a different country: the Soviet Union. Too many Americans act as though there is no meaningful difference between that entity and Russia. Worse still, U.S. leaders have embraced the same kind of uncompromising, hostile policies that Washington pursued to contain Soviet power. It is a major blunder that has increasingly poisoned relations with Moscow since the demise of the Union of Soviet Socialist Republics (USSR) at the end of 1991. One obvious difference between the Soviet Union and Russia is that the Soviet governing elite embraced Marxism-Leninism and its objective of world revolution. Today’s Russia is not a messianic power. Its economic system is a rather mundane variety of corrupt crony capitalism, not rigid state socialism. The political system is a conservative autocracy with aspects of a rigged democracy, not a one-party dictatorship that brooks no dissent whatsoever. Russia is hardly a Western-style democracy, but neither is it a continuation of the Soviet Union’s horrifically brutal totalitarianism. Indeed, the country’s political and social philosophy is quite different from that of its predecessor. For example, the Orthodox Church had no meaningful influence during the Soviet era—something that was unsurprising, given communism’s official policy of atheism. But today, the Orthodox Church has a considerable influence in Putin’s Russia, especially on social issues. The bottom line is that Russia is a conventional, somewhat conservative, power, whereas the Soviet Union was a messianic, totalitarian power. That’s a rather large and significant difference, and U.S. policy needs to reflect that realization. An equally crucial difference is that the Soviet Union was a global power (and, for a time, arguably a superpower) with global ambitions and capabilities to match. It controlled an empire in Eastern Europe and cultivated allies and clients around the world, including in such far-flung places as Cuba, Vietnam, and Angola. The USSR also intensely contested the United States for influence in all of those areas. Conversely, Russia is merely a regional power with very limited extra-regional reach. The Kremlin’s ambitions are focused heavily on the near abroad, aimed at trying to block the eastward creep of the North Atlantic Treaty Organization (NATO) and the U.S.-led intrusion into Russia’s core security zone. The orientation seems far more defensive than offensive. It would be difficult for Russia to execute anything more than a very geographically limited expansionist agenda, even if it has one. The Soviet Union was the world’s number two economic power, second only to the United States. Russia has an economy roughly the size of Canada’s and is no longer ranked even in the global top ten. It also has only three-quarters of the Soviet Union’s territory (much of which is nearly-empty Siberia) and barely half the population of the old USSR. If that were not enough, that population is shrinking and is afflicted with an assortment of public health problems (especially rampant alcoholism). All of these factors should make it evident that Russia is not a credible rival, much less an existential threat, to the United States and its democratic system. Russia's power is a pale shadow of the Soviet Union's. The only undiminished source of clout is the country's sizeable nuclear arsenal. But while nuclear weapons are the ultimate deterrent, they are not very useful for power projection or warfighting, unless the political leadership wants to risk national suicide. And there is no evidence whatsoever that Putin and his oligarch backers are suicidal. Quite the contrary, they seem wedded to accumulating ever greater wealth and perks. Finally, Russia’s security interests actually overlap substantially with America’s—most notably regarding the desire to combat radical Islamic terrorism. If U.S. leaders did not insist on pursuing provocative policies, such as expanding NATO to Russia’s border, undermining longtime Russian clients in the Balkans (Serbia) and the Middle East (Syria), and excluding Russia from key international economic institutions such as the G-7, there would be relatively few occasions when vital American and Russian interests collide. A fundamental shift in U.S. policy is needed, but that requires a major change in America's national psychology. For more than four decades, Americans saw (and were told to regard) the Soviet Union as a mortal threat to the nation's security and its most cherished values of freedom and democracy. Unfortunately, a mental reset did not take place when the USSR dissolved, and a quasi-democratic Russia emerged as one of the successor states. Too many Americans (including political leaders and policymakers) act as though they are still confronting the Soviet Union. It will be the ultimate tragic irony if, having avoided war with a totalitarian global adversary, America now stumbles into war because of an out-of-date image of, and policy toward, a conventional, declining regional power. Yet unless U.S. leaders change both their mindsets and their policies toward Russia, that outcome is a very real possibility.

## AT: Warming

### turn—renewables

#### High oil prices increase fossil fuel investments (also says oil prices high now)

Plumer 22 [(Brad, Brad Plumer is a climate reporter specializing in policy and technology efforts to cut carbon dioxide emissions. He has also covered international climate talks and the changing energy landscape in the United States for The New York Times.) "How Spiking Energy Prices Complicate the Fight Against Global Warming (February 4, 22022),", No Publication, https://www.nytimes.com/2022/02/02/climate/oil-gas-prices-climate-change.html, 2-2-2022] TDI

WASHINGTON — While world leaders have vowed to scale back the use of fossil fuels to help keep a lid on global warming, a drastic upheaval in the markets for oil, natural gas and coal could complicate the shift toward cleaner sources of energy.

Global oil prices have soared to their highest level in seven years, nearing $90 per barrel, as fears grow of a Russian invasion of Ukraine. Europe is in the grips of a severe natural gas crunch that has roiled energy markets worldwide. And global demand for coal, the dirtiest of all fossil fuels, has surged to record highs as economies bounce back from pandemic lows.

There’s a broader lesson here, energy experts said. Even as governments and businesses invest in low-carbon energy sources like wind and solar power, the **world will remain deeply reliant on fossil fuels for years** to come. Unless that transition is carefully managed, many countries could face volatile energy prices and other disruptions that, in turn, threaten to **undermine support for policies to reduce greenhouse gas emissions.**

Here are four big trends to watch.

After the coronavirus pandemic struck in 2020, global investment in oil and gas projects declined by 30 percent and has been slow to recover. But **global demand** for oil has snapped back faster and is **projected to reach records this year**, as economies rebound. **Supplies have struggled to keep up.**

On top of that, recent geopolitical turmoil — including supply disruptions in Kazakhstan and fears of a Russian invasion of Ukraine — have lifted **oil prices** to their **highest levels since 2014**.

Although Western oil companies have been drilling fewer wells since the pandemic began, partly held back by investors wary of unprofitable projects, high prices could shift that calculus. On Tuesday, Exxon Mobil announced it would increase spending on new oil wells and other projects by up to 45 percent this year after reporting $23 billion in profits for 2021, its best result in seven years.

Carbon Tracker, a London-based think tank, cautioned last week that **higher oil prices may lead energy companies to invest billions** in new drilling projects that could undermine international efforts to fight climate change.

In the United States, rising gasoline prices — currently averaging $3.40 per gallon, a dollar higher than a year ago — have been a drag on the approval ratings of President Biden, who is struggling to persuade Congress to pass At the same time, the Biden administration has defended moves to issue new oil and gas permits on public lands climate policies aimed at reducing fossil-fuel emissions. At the same time, the Biden administration has defended moves to issue new oil and gas permits on public lands, although those efforts have been slowed by federal courts.

But high oil prices aren’t always bad news for clean energy. They can also depress oil demand by, for example, pushing people to buy electric vehicles that don’t require gasoline. Last year, electric cars made up 20 percent of all new sales in Europe and 15 percent of new sales in China, according to BloombergNEF, a research group.

In recent months, the world has struggled with spiking prices for natural gas, a fuel used in both power plants and home heating, that has caused ripple effects across the globe. Utility bills have soared from Italy to South Korea, while fertilizer plants in Britain and Germany have had to curtail operations. (Natural gas is a key ingredient in nitrogen-based fertilizer.)

The causes of the gas crunch are numerous: Global demand has rebounded faster than supply since the pandemic began; lower output from hydropower dams in China and Brazil have led to a surge of gas imports; a cold snap last spring across Europe increased demand and reduced gas inventories.

The crisis is particularly acute in Europe, where natural gas prices are now five times as high as they were a year ago. Officials are racing to procure new shipments of gas from overseas in case Russia, which provides one-third of Europe’s natural gas, curtails supplies in the event of a conflict over Ukraine.

There are also signs the gas crunch could undermine unity within the European Union over policies to fight climate change.

Officials are currently debating a sweeping new set of clean-energy measures aimed at cutting emissions by 2030. Some nations, like Spain, have called for a faster shift away from fossil fuels to reduce Europe’s exposure to gas markets. But others, like Poland, have urged a delay in stricter climate action amid the crisis.

And there’s the possibility that skyrocketing energy prices could bolster unrest akin to the “Yellow Vests” protests in 2018, which forced the French government to backtrack on plans to increase fuel taxes as a way to reduce emissions.

Across the globe, **rising natural gas prices have provided a boost to coal**, which typically **produces twice as much carbon dioxide as gas** when burned for electricity, driving up planet-warming emissions.

Global coal consumption reached a record in 2021 and was on track to rise further in 2022, the International Energy Agency recently said. That was partly because **electricity demand is surging in countries** like China and India**, and investment in renewable energy has not kept pace**. But high natural gas prices have also **spurred many electric utilities to turn to coal.**

The United States is one example. Over the past decade, as advances in fracking led to a boom in domestic gas production, the country has become one of the world’s largest exporters of liquefied natural gas.

Those exports have become a key source of global supply during the latest crisis. But they have also **boosted natural gas prices at home**, which in turn means that **some utilities are finding it economical to run their coal plants more often**. Last year, U.S. coal power emissions increased 17 percent after years of falling steadily, putting the country further off course from reaching its climate goals.

“It really illustrates how much we’ve depended on cheap natural gas prices to keep coal in decline,” said Kate Larsen, a partner at the Rhodium Group, a research firm. “Overall, we still expect coal to decline further in the years ahead, but unless there are new policies put in place to clean up the power sector, the **coal industry could see a bit of a lifeline if there are big swings in the gas market.”**

In a recent essay, Fatih Birol, executive director of the International Energy Agency, argued that climate change policies were not to blame for the current global energy crisis. But, he warned, “that does not mean that the road to net zero emissions will be smooth.”

One problem, he said, is that while many countries have cut back on investments in fossil fuels like oil and gas in recent years**, energy demand is still rising, and nations have not spent enough on cleaner sources** like wind, solar or nuclear power to fill the gap. If the world wants to limit global warming to 1.5 degrees Celsius above preindustrial levels — a goal many leaders have endorsed to avoid the worst consequences of climate change — global investment in clean energy would need to triple from current levels by 2030.

Mr. Birol also noted that, because many countries will remain reliant on fossil fuels for years to come, they will **need to take steps to prepare for market disruptions**, such as improved gas storage in Europe or energy efficiency measures **that can blunt the damage from rising prices**. “This needs to happen quickly,” he wrote, “or global energy markets will face a turbulent and volatile period ahead.”

### defense--Renewables

#### The US energy grid isn’t ready for a switch to renewable energy

Popovich and Plumer 23 [(Nadia and Brad, Nadja Popovich is a data and graphics reporter on the Climate desk at The New York Times. She joined the team in 2017 and, since then, has covered climate science, energy policy and the real-world impacts of our warming world. She has won numerous design and journalism awards for her work. Brad Plumer is a climate reporter specializing in policy and technology efforts to cut carbon dioxide emissions. He has also covered international climate talks and the changing energy landscape in the United States for The New York Times.) "Why the U.S. Electric Grid Isn’t Ready for the Energy Transition,", No Publication, https://www.nytimes.com/interactive/2023/06/12/climate/us-electric-grid-energy-transition.html, 6-12-23] TDI

Tapping into the nation’s vast supplies of wind and solar energy would be one of the cheapest ways to cut the emissions that are dangerously heating the planet, [studies](https://archive.is/o/0HCGT/https:/netzeroamerica.princeton.edu/the-report)[have](https://archive.is/o/0HCGT/https:/www.2035report.com/electricity/)[found](https://archive.is/o/0HCGT/https:/www.nrel.gov/analysis/100-percent-clean-electricity-by-2035-study.html). That would mean building thousands of wind turbines across the gusty Great Plains and acres of solar arrays across the South, creating clean, low-cost electricity to power homes, vehicles and factories.

But many **spots with** the **best** sun and wind are **far from cities and the existing grid**. To make the plan work, the nation would need **thousands of miles of new** high-voltage transmission lines — **large power lines that would span multiple grid regions.**

To understand the scale of what’s needed, compare today’s renewable energy and transmission system to [one estimate of what it would take](https://archive.is/o/0HCGT/https:/www.nrel.gov/analysis/100-percent-clean-electricity-by-2035-study.html) to reach the Biden administration’s goal of 100 percent clean electricity generation by 2035. **Transmission capacity would need to more than double in just** over **a decade:**

There are **enormous challenges** to building that much transmission, including[convoluted permitting processes](https://archive.is/o/0HCGT/https:/www.bloomberg.com/news/articles/2023-06-07/renewable-energy-projects-are-held-up-by-us-permitting-rules) and **potential opposition** from local communities. But the problems start with planning — or rather, a **lack of planning**.

There is **no single entity in charge of organizing** the grid, the way the federal government oversaw the development of the Interstate Highway System in the 1950s and ‘60s. The electric system was[cobbled together over a century](https://archive.is/o/0HCGT/https:/www.construction-physics.com/p/the-birth-of-the-grid) by thousands of independent utilities building smaller-scale grids to carry power from large coal, nuclear or gas plants to nearby customers.

By contrast, the kinds of longer-distance transmission lines that would transport wind and solar from remote rural areas often require the approval of multiple regional authorities, who **often disagree** over whether the lines are needed or who should pay for them.

“It’s very different from how we do other types of national infrastructure,” said Michael Goggin, vice president at Grid Strategies, a consulting group. “Highways, gas, pipelines — all that is paid for and permitted at the federal level primarily.”

In recent decades, the **country**[has hardly built any](https://archive.is/o/0HCGT/https:/www.brattle.com/wp-content/uploads/2021/11/A-Roadmap-to-Improved-Interregional-Transmission-Planning_V4.pdf)**major high-voltage power lines that connect different grid** regions. While utilities and grid operators now spend roughly $25 billion per year on transmission, much of that consists of local upgrades instead of long-distance lines that could import cheaper, cleaner power from farther away.

“Utilities plan for local needs and **build** lines **without thinking of the bigger picture**,” said Christy Walsh, an attorney at the Natural Resources Defense Council.

Study after study has found that broader grid upgrades would be hugely beneficial. A [recent draft analysis](https://archive.is/o/0HCGT/https:/www.energy.gov/gdo/national-transmission-needs-study) by the Department of Energy found “a pressing need for additional electric transmission” — especially between different regions.

The climate stakes are high. Last year, Congress approved hundreds of billions of dollars for solar panels, wind turbines, electric vehicles and other technologies to tackle global warming. But **if** the United States **can’t build new transmission at a faster pac**e, roughly **80 percent of** the emissions **reductions** expected from that bill [might not happen](https://archive.is/o/0HCGT/https:/repeatproject.org/docs/REPEAT_IRA_Transmission_2022-09-22.pdf), researchers at the Princeton-led REPEAT Project found.

Already, a lack of transmission capacity means that thousands of proposed wind and solar projects [are facing multiyear delays](https://archive.is/o/0HCGT/https:/www.nytimes.com/2023/02/23/climate/renewable-energy-us-electrical-grid.html) and rising costs to connect to the grid. In many parts of the country, **existing power lines are** often **so clogge**d that they can’t deliver electricity from wind and solar projects to where it is needed most and **demand is** often met by more expensive **fossil fuel plants** closer to homes and businesses. This problem, [known as congestion](https://archive.is/o/0HCGT/https:/www.utilitydive.com/news/grid-congestion-cost-transmission-grid-strategies-report/647668/%23:~:text=U.S.-wide%20grid%20congestion%20cost,according%20to%20Grid%20Strategies'%20estimates.)**, costs the country billions of dollars per year** and has been getting worse.

The dearth of long-distance transmission isn’t just a climate problem, said Mathias Einberger, a manager for RMI’s Carbon-Free Electricity Program. It spells trouble for reliability, too.

Many **power operators are increasingly struggling** to keep the lights on as demand rises and extreme weather events become more frequent and severe. More capacity to transfer power between regions could help, so that if a storm knocked out power plants in one area, its neighbors could send electricity. Texas, for example, could have suffered fewer blackouts during a deadly winter storm in 2021 if its isolated grid had more connections with the Southeast, [one analysis found](https://archive.is/o/0HCGT/https:/acore.org/wp-content/uploads/2021/07/GS_Resilient-Transmission_proof.pdf).

There are a few efforts underway to ease the bottlenecks. The Biden administration has billions of dollars to help fund transmission projects, and Congress has given the federal government [new authority to override objections](https://archive.is/o/0HCGT/https:/www.canarymedia.com/articles/transmission/bidens-got-a-plan-for-ramping-up-energy-transmission) from state regulators for certain power lines deemed to be in the national interest.

“There’s no silver bullet,” said Maria Robinson, the director of the Department of Energy’s newly created Grid Deployment Office. “Every transmission project is unique like a fingerprint, facing its own challenges, so we need a large arsenal of tools to try to move things along.”

The Federal Energy Regulatory Commission, an independent agency that regulates interstate transmission of electricity, gas and oil, is exploring ways to encourage grid operators to [do more long-term planning](https://archive.is/o/0HCGT/https:/www.ferc.gov/news-events/news/ferc-issues-transmission-nopr-addressing-planning-cost-allocation) and to [strengthen ties between regions](https://archive.is/o/0HCGT/https:/www.federalregister.gov/documents/2022/12/06/2022-26474/establishing-interregional-transfer-capability-transmission-planning-and-cost-allocation). Some lawmakers have proposed bills that would give the commission more power to approve the routes of major new lines that pass through multiple states, the way it does with gas pipelines.

But these **efforts** still **face plenty of resistance**. Utilities are sometimes wary of long-distance transmission lines that might undercut their local monopolies. Some Republicans in Congress say giving the federal government more authority over transmission would trample on states’ rights. During the debt ceiling debate, Democrats [floated a proposal](https://archive.is/o/0HCGT/https:/www.washingtonpost.com/politics/2023/06/02/gop-no-longer-loves-power-lines-that-bad-biden-climate-goals/) to mandate more connectivity between different grid regions, a provision that was opposed by some utilities and Republicans, and was eventually dropped.

If the country continues to struggle to build long-distance transmission, it might need to opt for more expensive measures to fight climate change instead, a [recent study](https://archive.is/o/0HCGT/https:/www.nrel.gov/analysis/100-percent-clean-electricity-by-2035-study.html) by the National Renewable Energy Laboratory found. That could mean building more advanced nuclear plants or gas plants that capture their emissions, which could in theory be built closer to population centers.

Getting better at managing how and when we use electricity could also relieve some of the pressure on the grid. For example, utilities could provide incentives for people to charge their electric cars and other devices when demand is low or ask them to turn off unnecessary appliances during extreme weather events.

But even that **wouldn’t** entirely **cancel out the need for a lot more transmission**.

### Defense — Warming

#### No catastrophic warming.

Ronald Bailey 22. Science writer and author of multiple books, citing Roger Pielke, Jr., Professor of Environmental Studies at the University of Colorado, “Worst-Case Climate Change Scenarios Are Highly Implausible, Argues New Study,” 2/9/22, https://reason.com/2022/02/09/worst-case-climate-change-scenarios-are-highly-implausible-argues-new-study/

Before rushing to kit out your climate prepper bunker, you might want to take a look at the new study by University of Colorado climate change policy researcher Roger Pielke that confirms what the Intergovernmental Panel on Climate Change found in August 2021, namely that the worst-case climate scenario is increasingly unlikely, and that while our future will be warmer, it will not be catastrophically so.

These dire predictions were based on calculations derived from a scenario of the future in which fossil fuel and agricultural emissions over the course of this century would boost atmospheric carbon dioxide to nearly 1,400 parts per million (ppm) by 2100. The current level of atmospheric carbon dioxide is just under 420 ppm, and that is up from the pre-industrial level of about 280 ppm. Largely as a result of this increase in atmospheric concentrations of greenhouse gases, global average temperature has risen to around 1.1°C above the pre-industrial level.

Climate researchers labeled this worst-case scenario "RCP8.5," and it has been somewhat updated in the new Intergovernmental Panel of Climate Change's Sixth Assessment Report (IPCC AR6) on the physical science basis of climate change and given a new moniker of SSP5-8.5.

The IPCC's AR6 report, released in August 2021, now acknowledges that "the likelihood of high emission scenarios such as RCP8.5 or SSP5-8.5 is considered low in light of recent developments in the energy sector."

The recent developments in the energy sector to which the AR6 report refers are that fossil fuel usage is likely to be fairly flat for the next 50 years. One of the main ways that the RCP8.5 scenario goes off the rails of plausibility is that it projects a six-fold rise in global coal consumption per capita by 2100. Since future coal consumption is likely to remain flat or decline, that means that global carbon dioxide emissions will be "approximately in line with the medium RCP4.5, RCP6.0 and SSP2-4.5 scenarios."

For some years now, University of Colorado climate change policy researcher Roger Pielke, Jr., and his colleagues have been pointing out that the development of the global economy is highly unlikely to trace the high emissions pathways that led to the worst projected outcomes. Nevertheless, climate studies based on the RCP8.5 scenario are the ones being relied upon by people making their predictions of dire climate calamity by the end of this century.

Pielke and his colleagues have published a new study in the journal Environmental Research Letters that argues that these intermediate emissions scenarios are much more plausible than the high end scenarios that engendered fears of climate catastrophe. "These scenarios project between 2 and 3 degrees C of warming by 2100, with a median of 2.2 degrees C," they conclude. They do, however, acknowledge that "these scenarios also indicate that the world is still off track from limiting 21st-century warming to 1.5 or below 2 degrees C."

These new calculations are based on the future energy use and energy policy projections found in the International Energy Agency's latest World Energy Outlook report. That report concludes that, instead of rising six-fold, global coal consumption will peak during this decade. On the other hand, the U.S. Energy Information Administration projects that world coal consumption will continue to rise slightly through 2050, but that's still far from the sixfold increase entailed in the RCP8.5 scenario.

To assess plausibility of most of the IPCC scenarios, Pielke and his colleagues ask which of the scenarios have projected carbon dioxide emissions growth errors and divergences of less than 0.1 or 0.3 percent per year over the observed growth rates between 2005 and 2020. That is, which scenarios tracked what actually happened with carbon dioxide emissions over the last fifteen years? Next they further parse how well the scenarios similarly track actual emissions beginning in 2005 through the IEA's projections of future emissions to 2050.

The chart above displays the plausibility of the various IPCC emissions scenarios by tracking how well they match likely cumulative emissions of carbon dioxide over the course of this century. The scenarios that closely track actual and projected IEA emissions are marked with blue dots (0.1 percent) and triangles (0.3 percent). "All of the plausible scenarios," explains Pielke in his Substack newsletter The Honest Broker, "envision less than 3 degrees Celsius total warming by 2100. In fact, the median projection is for 2100 warming of 2.2 degrees Celsius." He adds that that "is within spitting distance of the Paris Agreement goal of holding temperatures to a warming of 2.0 degrees Celsius."

Under the 2015 Paris Climate Change Agreement, signatories committed to "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels."

So man-made global warming of 4°C by 2100 above pre-industrial levels is not a real possibility.

"Is the world ready for good news on climate?," asks Pielke. Yes, we are

## AT: Iran

### turn—prolif good

#### Iranian prolif solves instability in the Middle East

Waltz 12 [(Kenneth, Oberlin College (BA) Columbia University (MA, PhD)), “Why Iran Should Get the Bomb: Nuclear Balancing Would Mean Stability”, https://www.jstor.org/stable/pdf/23218033.pdf?refreqid=excelsior%3A407192ca5d8f54c71f9dcd5f0dd09441&ab\_segments=&origin=&initiator=&acceptTC=1, July/August 2012} TDI Eljoe

Israel's regional nuclear monopoly, which has proved remarkably durable for the past four decades, has long fueled instability in the Middle East. In no other region of the world does a lone, unchecked nuclear state exist. It is Israel's nuclear arsenal, not Iran's desire for one, that has contributed most to the current crisis. Power, after all, begs to be balanced. What is surprising about the Israeli case is that it has taken so long for a potential balancer to emerge. Of course, it is easy to understand why Israel wants to remain the sole nuclear power in the region and why it is willing to use force to secure that status. In 1981, Israel bombed Iraq to prevent a challenge to its nuclear monopoly. It did the same to Syria in 2007 and is now considering similar action against Iran. But the very acts that have allowed Israel to maintain its nuclear edge in the short term have prolonged an imbalance that is unsustainable in the long term. Israel's proven ability to strike potential nuclear rivals with impunity has inevitably made its enemies anxious to develop the means to prevent Israel from doing so again. In this way, the current tensions are best viewed not as the early stages of a relatively recent Iranian nuclear crisis but rather as the final stages of a decades-long Middle East nuclear crisis that will end only when a balance of military power is restored. UNFOUNDED FEARS One reason the danger of a nuclear Iran has been grossly exaggerated is that the debate surrounding it has been distorted by misplaced worries and fundamental misunderstandings of how states generally behave in the international system. The first prominent concern, which undergirds many others, is that the Iranian regime is innately irrational. Despite a widespread belief to the contrary, Iranian policy is made not by "mad mullahs" but by perfectly sane ayatollahs who want to survive just like any other leaders. Although Iran's leaders indulge in inflammatory and hateful rhetoric, they show no propensity for self-destruction It would be a grave error for policymakers in the United States and Israel to assume otherwise. Yet that is precisely what many U.S. and Israeli officials and analysts have done. Portraying Iran as irrational has allowed them to argue that the logic of nuclear deterrence does not apply to the Islamic Republic. If Iran acquired a nuclear weapon, they warn, it would not hesitate to use it in a first strike against Israel, even though doing so would invite massive retaliation and risk destroying everything the Iranian regime holds dear. Although it is impossible to be certain of Iranian intentions, it is far more likely that if Iran desires nuclear weapons, it is for the purpose of providing for its own security, not to improve its offensive capabilities (or destroy itself). Iran may be intransigent at the negotiating table and defiant in the face of sanctions, but it still acts to secure its own preservation. Iran's leaders did not, for example, attempt to close the Strait of Hormuz despite issuing blustery warnings that they might do so after the EU announced its planned oil embargo in January. The Iranian regime clearly concluded that it did not want to provoke what would surely have been a swift and devastating American response to such a move. Nevertheless, even some observers and policymakers who accept that the Iranian regime is rational still worry that a nuclear weapon would embolden it, providing Tehran with a shield that would allow it to act more aggressively and increase its support for terrorism. Some analysts even fear that Iran would directly provide terrorists with nuclear arms. The problem with these concerns is that they contradict the record of every other nuclear weapons state going back to 1945. History shows that when countries acquire the bomb, they feel increasingly vulnerable and become acutely aware that their nuclear weapons make them a potential target in the eyes of major powers. This awareness discourages nuclear states from bold and aggressive action. Maoist China, for example, became much less bellicose after acquiring nuclear weapons in 1964, and India and Pakistan have both become more cautious since going nuclear. There is little reason to believe Iran would break this mold. As for the risk of a handoff to terrorists, no country could transfer nuclear weapons without running a high risk of being found out. U.S. surveillance capabilities would pose a serious obstacle, as would the United States' impressive and growing ability to identify the source of fissile material. Moreover, countries can never entirely control or even predict the behavior of the terrorist groups they sponsor. Once a country such as Iran acquires a nuclear capability, it will have every reason to maintain full control over its arsenal. After all, building a bomb is costly and dangerous. It would make little sense to transfer the product of that investment to parties that cannot be trusted or managed. Another oft-touted worry is that if Iran obtains the bomb, other states in the region will follow suit, leading to a nuclear arms race in the Middle East. But the nuclear age is now almost 70 years old, and so far, fears of proliferation have proved to be unfounded. Properly defined, the term "proliferation" means a rapid and uncontrolled spread. Nothing like that has occurred; in fact, since 1970, there has been a marked slowdown in the emergence of nuclear states. There is no reason to expect that this pattern will change now. Should Iran become the second Middle Eastern nuclear power since 1945, it would hardly signal the start of a landslide. When Israel acquired the bomb in the 1960s, it was at war with many of its neighbors. Its nuclear arms were a much bigger threat to the Arab world than Iran's program is today. If an atomic Israel did not trigger an arms race then, there is no reason a nuclear Iran should now. REST ASSURED In 1991, the historical rivals India and Pakistan signed a treaty agreeing not to target each other's nuclear facilities. They realized that far more worrisome than their adversary's nuclear deterrent was the instability produced by challenges to it. Since then, even in the face of high tensions and risky provocations, the two countries have kept the peace. Israel and Iran would do well to consider this precedent. If Iran goes nuclear, Israel and Iran will deter each other, as nuclear powers always have. There has never been a full-scale war between two nuclear-armed states. Once Iran crosses the nuclear threshold, deterrence will apply, even if the Iranian arsenal is relatively small. No other country in the region will have an incentive to acquire its own nuclear capability, and the current crisis will finally dissipate, leading to a Middle East that is more stable than it is today.

### turn—war causes prolif

#### War in the Middle East exacerbates prolif

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The talks over the revival of the 2015 Iran nuclear deal, known as the Joint Comprehensive Plan of Action (JCPOA), have so far proven difficult. In December 2021, after Iran played hardball in Vienna, U.S. Secretary of Defense Lloyd Austin, in a meeting with his Israeli counterpart in Washington, announced that the Biden administration is “prepared to turn to other options” to halt Tehran’s nuclear program if diplomatic talks fail to do so. The White House also confirmed that President Joe Biden has ordered his staff to prepare “additional measures.” Media reports on the U.S.-Israeli discussions revealed that the “other option” is said to be a joint military strike on Iran’s nuclear facilities. In early January 2022, however, things started to change. Iran’s agreement with the International Atomic Energy Agency (IAEA) to reinstall monitoring cameras at the Karaj nuclear facility and the U.S. assessment of modest progress in the Vienna talks brought back hope for a diplomatic solution. Also, the Israeli position toward a U.S. deal with Iran dramatically shifted. Foreign Minister Yair Lapid said Israel is not against any agreement and “a good deal is a good thing.” Yet the debate about military options is still ongoing in Tel Aviv despite **significant disagreements** on the issue between the Israel Defense Forces (IDF) Intelligence Chief Maj. Gen. Aharon Haliva and Mossad Director David Barnea. Several questions are critical in this debate. **Will the U.S. secure a longer and stronger non-proliferation objective by carrying out a military strike on Iranian nuclear facilities?** Will the strike be able to convince the Islamic Republic’s leadership to abandon sensitive parts of its nuclear program, if not the whole program? Given the limits of military strikes, **is the threat of war a meaningful strategy and does it pose a credible threat to Iranian leaders**? What would be the consequences for the U.S.’s future ability to respond if Iran decides to speed up a new weapons program after the strike? Debates on a military solution to Iran’s nuclear program are heavily polarized between those arguing that a threat of war and a preventive non-proliferation military strike can be a solution and those arguing that **military action will only accelerate Iran’s nuclear program**. This difference of opinion is also at the core of the divergence in U.S. and Israeli intelligence assessments. The truth is that it is **highly unlikely that Tehran would abandon its nuclear program after a military strike.** There are serious operational limits to the success of such an operation that at the end would enable Tehran to restart key areas of its nuclear activity, likely shortly after the attack. Besides, the domestic costs of abandoning the nuclear project would be steep; it would be, in effect, political suicide for Supreme Leader Ayatollah Ali Khamenei. While no major change in the political-military elites who decide on Iran’s nuclear decisions has taken place, it is unreasonable to believe that Iranian leaders will trust the U.S. enough to abandon a program in which they have already invested heavily. On the contrary, a military strike will be a catalyst to build up an assessment in favor of the security benefits of having a nuclear bomb, ultimately exacerbating non-proliferation dynamics in the Middle East. While the argument is often made that time is running out to reach an agreement, in reality the parties are constrained by a lack of options and are bound to a diplomatic resolution of the crisis as the only rational choice available. Tactical ambiguities A quick review of previous Israeli counter-proliferation strikes may be helpful. The IDF attack on the Syrian nuclear site in Deir ez-Zour in September 2007 benefited from a short decision and operation cycle. Starting in late 2006, the planning and execution of the strike proceeded under tight secrecy, which provided a major element of surprise. The Syrian nuclear site only relied on camouflage and concealment because Bashar al-Assad had calculated that secrecy would provide the most protection for the project. This assessment made the project vulnerable to intelligence disclosure. Not only did the Syrian reactor not have surface to air missile (SAM) protection, but it was also only moderately armored and located above ground. The Osirak reactor in Iraq, targeted in an Israeli strike in 1981, was a similarly soft and solitary target. In addition to Iraq’s poorly prepared SAM systems, the Israeli strike came in the midst of the Iran-Iraq war, at a time when Iraq’s centralized air-defense systems were constantly saturated due to Iran’s heavy aerial bombardment. This gave Israel the possibility of covering up the attack as well as vital tactical surprise about its direction. None of these conditions match Iran’s current situation, and a U.S.-Israeli attack would take place in a fundamentally different strategic environment. First, bombing Iran’s nuclear facilities would have no element of surprise. For years, U.S. presidents and international security experts have been analyzing such a scenario. Plans on how Israel might attack Iran were even published by Yoaz Hendel in his 2012 book titled Israel vs. Iran: The Shadow War. Both today and back in 2011-12, when diplomatic negotiations proved bumpy, the threat of a military strike was a fixed part of the U.S. negotiating strategy. Tehran has had more than enough time to prepare and formulate a well-developed counter-strike plan. In fact, **Tehran has specifically designed its key nuclear facilities, such as Fordow, to withstand such a strike**. Second, Tehran’s strategy has been to combine active and passive defense measures as part of its readiness plan. Its research, centrifuge production, uranium mining and processing, and possible weapons production facilities are widely dispersed across the country. Moreover, they all benefit from various levels of hardening, air-defense systems, and electronic warfare measures. Natanz is located 20 meters below ground and Fordow is buried under 80 meters of rock in the mountains. These are hard and deeply buried targets (HDBT), which complicates targeting and operational planning and negatively impacts operational success rates. Third, there is a major intelligence gap about the level of hardening in Fordow and Natanz. Experts have already raised doubts about whether a single U.S. 30,000-pound Massive Ordnance Penetrator (MOP), or “bunker buster” bomb, which is the main conventional option, can penetrate and inflict sufficient damage on these facilities. Optimistic assumptions rely on a set of incomplete intelligence assessments. Yet there is little data on actual redundancy levels and extra hardening at these sites, and particularly on new upgrades that Iran may have carried out after the MOP became operational — measures that might help to withstand the newly upgraded U.S. MOP. Thus, guaranteeing that a strike would render Fordow dysfunctional for a meaningful period of time from a non-proliferation perspective is extremely difficult. And fourth, for the above reasons, the operation is deemed to be a large-scale military campaign. According to the Congressional Research Service, the Israeli or U.S. air force would require hundreds of aircraft and thousands of sorties to deliver enough bombs on multiple targets as well as maintain operational sustainability to conduct a post-strike assessment of success. In addition, HDBT targets, especially Fordow, might require more than one strike to ensure effective destruction. In other words, the U.S. and Israel would also need to design a plan to blind Iran’s national air-defense system across the whole country given the depth of the nuclear sites inside Iran. However, Tehran has heavily invested in air-defense systems too. It has made them geographically dispersed, has created decentralized passive SAMs resilient to jamming, has improved its electronic warfare capability with Russian help, and is using unknown indigenous batteries. It operates a multi-layered architecture of short to long range, homemade to imported versions of SAMs. There is little data about their operational capabilities and some versions, such as the Bavar-373 and new 3-Khordad SAM systems, are mostly unknown, although the 3-Khordad did shoot down a U.S. RQ-4A in 2019. Suppressing these assets is in no away a small-scale operation like the Syrian and Iraqi cases. In a scenario in which Tehran’s strategy relies on forward air suppression by using Syrian and Iraqi territory to hit Israeli jets, the situation will become even more complicated. This makes any surgical air campaign unrealistic. Tehran has warned about a crushing response and in its latest “Great Prophet” drills has signaled its own version of a plan to strike back against Israeli nuclear sites. This means U.S. and Israeli planners will also need to find a way of neutralizing Iran’s second-strike capability. **All of this adds up to a recipe for a full-scale war scenario that is in no way comparable to the low-cost Israeli operations in Iraq and Syria**. Recent debates have highlighted the limits of Israel’s military capabilities to carry out such a scenario, while the odds of tactical success remain questionable. Indeed, the high costs and uncertain non-proliferation value of such a strike substantially undermine the credibility of the “threat of war policy” as a negotiating tactic. **Iran may build back better** Unlike the Iraqi case, which received less international public attention, probably because it occurred in the midst of Saddam Hussein’s war with Iran, the Iranian nuclear program is a highly public matter. Syria’s nuclear reactor was also hit in complete silence by a deniable Israeli attack. It raised minimum political costs for Assad. Israeli planners were smart to consider the fact that if the attack avoided embarrassing and humiliating Assad publicly, there was a reasonable chance he would decide to hold back and not respond. By contrast, Tehran has already invested billions of dollars as well as major political capital in its nuclear projects. In domestic propaganda, Iran’s nuclear capability has been deemed a source of national pride and one of the revolution’s key successes. Above and beyond the humiliation that a strike would cause, an immediate policy shift in its aftermath would have major political costs for the Islamic Republic as well. The leadership’s restraint would not be a face-saving strategy since there would be no plausible deniability for the U.S. or Israel. Thus, **the public humiliation caused by attacks on Iranian nuclear sites would inevitably put Supreme Leader Khamenei under huge political pressure to react. Iran’s response is likely to be two-fold and involve both a military and a nuclear response.** But as I have shown in earlier case studies, Iranian behavior follows a core logic of “balancing the threat” and “escalating to deescalate.” As was evident in 2011-12 and the 2019 tensions in the Strait of Hormuz, a growing assessment of existential threats causes Tehran to distance itself from conservative policy pursuits and instead adopt a brinkmanship strategy to reveal the risks of its competitors' policy and convince the aggressor of the mutual costs of insecurity. Tehran’s response to several acts of Israeli nuclear sabotage since 2020 has followed a similar logic. Iran’s response to the assassination of Mohsen Fakhrizadeh on Nov. 27, 2020 was a mix of political, legislative, technical, and restrictive measures that **ultimately resulted in the expansion of its nuclear activities**. As the International Crisis Group reports, this included a bill in the Iranian parliament mandating “the initiation of 20 per cent uranium enrichment and annual accumulation of 120kg at that level; 500kg of monthly enriched uranium production; installation of additional IR-2 and IR-6 centrifuges; launch within five months of a uranium metal factory, work on which has commenced; preparation for reverting the Arak heavy-water reactor to its pre-JCPOA configuration; and suspending implementation of the Nuclear Non-Proliferation Treaty’s Additional Protocol should other JCPOA signatories provide no sanctions relief within two months of the law’s enactment.” The response to sabotage at the Natanz facility in April 2021 was a similar decision to go for 60% uranium enrichment and rebuild a new protected workshop in a tunnel under the mountain. Indeed, the **attack provided Tehran a unique opportunity to test its technical capabilities for enrichment closer to weapons-grade level and make its facilities resistant to possible future sabotage attempts**. Iran’s response following sabotage at the Karaj centrifuge production plant on June 23, 2021 was guided by a similar logic too. The sabotage damaged the facility and halted its production but also blinded IAEA cameras. But after resuming activities at the site almost two months later, the IAEA was barred from installing new cameras. Again, Tehran attempted to impose a cost on the aggressor for the sabotage by benefiting from several months of unmonitored activities. In this way, the Islamic Republic’s leaders have shown their ability to forge a domestic consensus and a political willingness to ratchet up tensions and use brinkmanship when threats to the regime are high. **Tehran’s indigenous nuclear know-how enables it to rebuild the destroyed facilities and build back a stronger program**. That said, it can be argued that Tehran’s response might involve more than just a number of tactical measures, restrictions on the IAEA, or even revisiting the Nuclear Non-Proliferation Treaty. Would a military strike strengthen the rationale for Iran’s nuclear bomb? The answer to this question seems to be positive. A military attack might radically change Iranian elites’ calculus of their security environment. CIA Director Bill Burns made it clear that he does not believe Iran's supreme leader has decided to take steps to weaponize a nuclear device. Yet a strike could dramatically change the regime’s assessment of immediate security threats by proving that it is unable to deter enemy aggression with conventional means amid a growing threat environment. So far, the military escalations since 2019 have gradually spurred public debate about the need for a nuclear bomb among Iranian experts and Persian media outlets. The Amad project, Iran’s nuclear weapons program in 1990s, was motivated by a similar assessment. Such an assessment would facilitate forging a consensus among political-military elites to opt for a nuclear deterrent and a strategic defense capability. **History suggests that Iraqi elites reached a similar conclusion after the Israeli attack on Osirak. It intensified Baghdad's commitment to acquiring nuclear weapons and created independent bureaucratic momentum toward weaponization and vested interest in the development of a nuclear weapons capability**. On the other side, there is no guarantee that the strike would increase the domestic obstacles to Iran’s nuclear program. Ironically, it might actually minimize such obstacles and justify the suppression of those with opposing ideas among the elites. Resolving the existential threats facing the revolution would then be linked to a nuclear device. This could be the moment that Iran’s supreme leader would have enough of a reason to changes his fatwa in favor of a nuclear bomb. The wider strategic consequences A military solution to Iran’s nuclear dispute might risk the U.S. shift to focus on great power competition as well. If Tehran decides to build back its nuclear program better and moves toward the bomb, then the U.S. will find itself in a repeated cycle of intelligence and military actions against Iranian nuclear facilities. The complexity of intelligence operations to locate and identify new Iranian sites will increase in a post-strike scenario in which the IAEA’s monitoring ability will probably be limited. At the same time, unification of bureaucratic and scientific bodies at the national level might increase the speed of Iranian activities and add to the complexity of intelligence assessments. Moreover, the Islamic Revolutionary Guard Corps now has a better technical capability and more experience in building deeply buried structures than it did when Fordow was built before 2007. That means Iran’s future nuclear facilities would likely incorporate new and more sophisticated passive defense measures and be better concealed, deeper, and harder to destroy. This new operational and intelligence situation would in turn create further complications for a future U.S. conventional strike capability and force the Pentagon and the Intelligence Community to devote more resources to the issue — resources that would not be devoted to strategic competition with China and Russia. At the same time, reaching a political deal with Tehran in a post-strike environment would be even harder. Tehran will calculate that even if it agrees to the U.S. demands, the future U.S. response might still include military intervention. In an atmosphere of mistrust between the U.S. and Iran, the value of complying with U.S. demands will continue to remain uncertain in the Iranian view. The U.S. will have a tough job assuring Iran of its non-coercive policy if Tehran stops and rolls back its weapons program. The weaker the perception of U.S. credibility is in the Iranian calculus, the more difficult it will be to reach a future political resolution to the problem — a situation that would force the U.S. to remain ready for continued militarily engagement with Iran in periodic follow-up strikes to neutralize future attempts, while absorbing the costs of Iranian military responses to punish the U.S. It should not be forgotten that the JCPOA is a part of a larger pathway toward rebuilding a peaceful regional security system in the Persian Gulf and the broader Middle East. This helped push forward the recent Saudi and Emirati talks with the Iranians, which are a further step toward the political resolution of other conflicts in the region. The opposite might also hold true, too. **A large-scale operation against Iran’s nuclear facilities could set off a series of military tit-for-tat strikes across the region and exacerbate existing conflict zones**, halting the momentum to form a peaceful regional security architecture. It could promote a renewed military approach to regional problems, which would be then adopted by other regional actors, including Iran — all of which would make it difficult for the U.S. to safely scale back its commitment or disengage from the region. The way forward In contrast to claims about the benefits of the threat of war for a non-proliferation strategy, a military approach to the Iran nuclear crisis has minimal non-proliferation value. Like the “maximum pressure” campaign, which posed short-term costs but failed to produce a non-proliferation value, a military strike could impose cost on Iran too, but it’s likely to fail when it comes to removing the rationale behind the Iranian nuclear program. It also has risks that might unexpectedly run out of control and increase the costs while its benefits remain disputable. The tactical ambiguities ahead of a military option and Iran’s pattern of responding to previous sabotage attempts prove the low credibility of the threat of war. Iranians know this too, and thus the threats fail to create even a meaningful level of fear that might persuade Tehran to make concessions. Instead, political concessions should be designed on the basis of mutual interests and not mutual fears. This means a long-term resolution of international non-proliferation concerns needs to be coupled with a long-term resolution of Iranian economic and security grievances connected with the nuclear issue. The lack of an alternative option for the nuclear talks is a reality that both Washington and Tehran should eventually accept. Iran needs to accept the fact that it cannot sustain its economy forever under heavy international sanctions, especially when it can derive real economic and security benefits from the revival of the JCPOA. In the same way, the U.S. and Israel should realize that a military strike cannot resolve their non-proliferation concerns since trying to resolve a political dispute through fear is not only fragile but also a highly risky strategy. The success of the Vienna talks through painful political concessions on both sides remains the only real way forward.

### defense—first-strike

#### First-strike fails to disarm Iran and causes rapid escalation

Shinkman 21 [(Paul Shinkman is a national security correspondent. He joined U.S. News & World Report in 2012 and has reported multiple times from conflict zones in Ukraine, Iraq, and Afghanistan, where he embedded with local and American forces.), “Iran-U.S. Violence Poised to Escalate Following Retaliatory Strike”, US News, <https://www.usnews.com/news/world-report/articles/2021-06-29/iran-us-violence-poised-to-escalate-following-retaliatory-strike>, 6/29/21] TDI

A strike against U.S. and allied forces in Syria has raised new concerns about an escalating cycle of violence with Tehran.

Iranian, Russian and Syrian state media claimed Tuesday a rocket attack the previous night against a U.S. base occupying an oil field in eastern Syria had wounded several of the special operations forces there, including members of the Kurdish peshmerga who were among the most potent ground fighters in the American-led war against the Islamic State group. The attack came a day after a U.S. aerial strike against weapons and drone facilities in Syria and Iraq operated by pro-Iranian militia groups known as the Popular Mobilization Units, which said four of its fighters were killed.

The exchange of violence appears poised to escalate in the near future both militarily and diplomatically. The Iraqi government expressed outrage on Monday that it had not been informed of the U.S. strikes in advance – an apparent violation of the terms by which the Pentagon operates in Iraq at the invitation of the central government in Baghdad. It also comes as the Biden administration tries to restore diplomatic talks with Tehran over its nuclear weapons program.

Analysts say the limited composition of the U.S. strikes, in retaliation for dozens of pro-Iranian militia strikes against U.S. facilities in Iraq and Syria, has raised new alarms about how Tehran will respond through its regional proxies.

"This attack, like the one preceding it, will not deter these militias from targeting U.S. and coalition forces again," Randa Slim, a senior fellow at the Middle East Institute, said of the U.S. operation late Sunday. "To the contrary, given the fact that four of their fighters were killed in the attack, and election season has already begun in Baghdad, these militias will use it to reinforce their narrative that their 'resistance' against the U.S. is for the defense of Iraqi sovereignty."

Slim says Tehran appears to be using the attacks as leverage in stalled negotiations with the U.S. over its nuclear program and the extent to which it will return to the 2015 deal brokered by the Obama administration. And it has strengthened its control over the government in Iraq through the militias it supports – which became part of the country's defense forces during the U.S.-led war against the Islamic State group – despite Baghdad's attempts to come out from under Iranian influence through new partnerships with its Arab neighbors, particularly Jordan and Egypt.

"No matter how hard the Iraqi government tries to steer the country away from the Iranian-U.S. conflict by reorienting its foreign policy toward its Arab neighborhood, Iran-backed Iraqi militias keep dragging it back into it," Slim says.

Others say the Biden administration will have to step up the military response if it is indeed serious about deterring Iran.

"Thus far, it has struck back just twice in response to twenty-four rocket and drone attacks over the past five months. If this response ratio continues, militias will simply keep escalating, and American lives will be lost," Michael Knights writes in an analysis note for the Washington Institute for Near East Policy.

The Biden administration's last retaliatory strike against Iran, in February, resulted in no casualties among senior militia leaders – apparently by design to avoid needless escalation. But those limitations also appear to have failed in sending the desired message.

"**One can safely state that Iran no longer fears being hit with heavy retaliation or upsetting the nuclear negotiations** – or perhaps no longer cares how those talks conclude," Knights writes. And he warns of new violence to come: "Iran and its militias tend to escalate against U.S. targets until they are checked."

Knights recommends the Biden administration shift its deterrent strategy against Iran by hitting back harder or more frequently, or specifically targeting the leadership of its proxies. He also suggests adopting a tactic employed by Israel of not openly taking credit for such strikes, which creates an air of unpredictability against its adversaries while granting them the room to de-escalate without appearing to be backing down.

The Defense Department did not offer any details on wounded U.S. or allied troops on Tuesday morning in keeping with established policy against publicly revealing the effect of enemy strikes.

The U.S. under the Trump administration maintained a presence in Syria to also prevent Iran-backed forces from seizing territory there. The Pentagon withdrew some forces and contained the others to areas around the oil fields in Syria following then-President Donald Trump's orders to remove all forces from Syria, which he later amended to have them focus only on seizing local oil fields.

### defense—prolif

#### Prolif narratives are overblown—empirics prove

Chapman 12 [Steve, Harvard honor graduate, columnist and editorial writer for the Chicago Tribune, “The Arms Race that Won't Happen,” <http://reason.com/archives/2012/07/09/the-arms-race-that-wont-happen>] TDI

Nuclear proliferation is always said to be on the verge of suddenly accelerating, and somehow it never does. In 1981, there were five declared nuclear powers--the U.S., the Soviet Union, China, Britain and France--as well as Israel, which was (and is) undeclared. And today? The number of members added since then is not 15 but three: India, Pakistan and North Korea. Most of the other countries on the list of likely proliferators never came close--including Argentina, Chile, Morocco and Tunisia. Iraq tried and failed. Libya made an effort and then chose to give up. The peril was greatly overblown. It probably is again. But our leaders are not about to let mere history debunk the apocalyptic scenarios. They recommitted to a policy based on fear rather than experience. The United States keeps trying to force Iran to abandon its suspected efforts to build a nuclear arsenal, and so far it has been rebuffed. Both Obama and Mitt Romney have said they would use force rather than let Iran acquire nukes. Chances are good that whoever wins in November, we will be at war with Tehran sometime in the next four years. But there is no reason to think Iran would ever use such weapons, and there is little reason to think it would spur other countries to get them. If all it takes to unleash regional proliferation is one fearsome state with nukes, the Middle East would have gone through it already--since Israel has had them for decades. Why would governments in the region respond differently to Iran? Many of them are allied with the U.S.--which means Iran can't attack or threaten them without fear of overwhelming retaliation. Turkey, as a member of NATO, enjoys a formal defense guarantee from Washington. The U.S. might offer similar assurances Saudi Arabia, Egypt and other nervous neighbors. One way or another, they would probably find they can manage fine. Iran is no scarier than Mao’s China was in 1964, when it detonated its first atomic device. Writes Francis Gavin, a professor at the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin, "It was predicted that India, Indonesia and Japan might follow." At the time, he noted in a 2009 article in International Security, "A U.S. government document identified 'at least 11 nations (India, Japan, Israel, Sweden, West Germany, Italy, Canada, Czechoslovakia, East Germany, Rumania and Yugoslavia)'with the capacity to go nuclear, a number that would soon 'grow substantially' to include 'South Africa, the United Arab Republic, Spain, Brazil and Mexico.'" Mexico? In recent decades, some countries have actually give up their nukes--including Ukraine(which inherited them from the Soviet Union)and South Africa. Others, like Brazil and Sweden, have scrapped their weapons programs. After the Cold War, it was assumed the newly reunified Germany would want to assert its new status by joining the nuclear club. It has yet to exhibit a glimmer of interest. A nuclear Iran would soon learn something previous nuclear powers already know: These weapons are not much use except to deter nuclear attack. What help have they been for the U.S. in Iraq or Afghanistan? China invaded Vietnam in 1979 to force the enemy's withdrawal from Cambodia. The Vietnamese not only refused but sent the People’s Liberation Army home with its tail between its legs. China regards Taiwan as part of its territory, but the island has remained functionally independent despite the threat of nuclear coercion. If Iran does get nukes, its neighbors that have survived without them will find that nothing much has changed. Nuclear proliferation is the danger that lurks just over the horizon, and that's where it is likely to stay.