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Skalamera, M.

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The Geopolitics of Energy after the Invasion of Ukraine

Long-term changes propelled by the clean-energy transition—in the distribution of geopolitical power, the meaning of sustainable energy consumption, and the scope and character of interdependence—are transforming the global energy order. Dependence on new critical materials and metals—such as chromium, copper, germanium and lithium, all essential inputs for many clean energy technologies—reflects new patterns of asymmetrical interdependence and calls into question some of our assumptions about oil and gas as strategic goods. Among these changes, the critical materials at the heart of the clean energy transition are infusing the geopolitics of energy with new meaning: the rise of renewables is undermining Russia’s position as an “energy superpower” at the precise moment that its relationship with Europe is being reshaped by its invasion of Ukraine.¹

Two decades ago, Russia’s role as the world’s largest producer and exporter of nearly every form of fossil fuel—oil, natural gas and coal—gave rise to the notion of Russia as an energy superpower.² This had great repercussions in the policy world and shored up President Putin’s efforts to create the impression that

Morena Skalamera is Assistant Professor of Russian and International Studies at Leiden University in the Netherlands, where her research focuses on the political economy of Eurasia, Russian and post-Soviet politics, and the geopolitics of energy in Eurasia. She can be reached at m.skalamera@hum.leidenuniv.nl.

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Russia still stood tall in world affairs.³ However, since the mid-2010s the advent of cost-competitive renewable sources of energy, such as solar photovoltaic panels, wind turbines, and electric car batteries, made such hydrocarbon-centric definitions of energy power outdated and dramatically reshuffled the cards for oil-rich producers, in Eurasia and elsewhere. In this new world, rather than focusing on new ways to get oil and gas out of the ground, new cutting-edge research concentrated on how to stop the extraction of oil or leave it as a “stranded asset” in the ground.⁴ New tensions over “critical energy materials,” meanwhile, showed that the energy transition was transforming the geopolitics of energy, rather than making it obsolete.⁵

This essay examines two foreign policy trends deriving from these market shifts, both of which are of particular concern for Russia as a key petrostate and have a strong bearing on international order. First, in the long term, over the next generation or so the energy transition is expected to erode the ability of petrostates to use oil and gas rents as tools of power projection abroad. Second, by contrast, in the short term (over the next ten to twenty years), failing petrostates have been and are more likely to reaffirm and extend intra-petrostate alliances, partnerships, and special relationships to counter the effects of the energy transition. These efforts to contain a loss of energy power have had, and will continue to have, direct effects on their power projection abroad, and in turn, on how power is distributed in the international system.

This article proceeds in three main sections. After summarizing the broader energy context in which these trends emerged, the next section discusses the subsequent tightening of relations among distressed petrostates. I close by positing three significant political effects resulting from the combination of Putin’s war and preexisting energy trends: the reframing of energy interdependence; “home-grown” clean energy becoming a tool of energy security; and China’s sharpening energy alignment with Russia amid Moscow’s loss of the European oil and gas market and increasing isolation from the West. I conclude by discussing the supply chain vulnerabilities arising from China’s prowess in clean energy technology and manufacturing, and how the war in Ukraine might affect issues of national and economic security due to China and Russia’s growing leadership in nuclear power.

The Energy Context: Reducing without Replacing

In a world that strives for “net zero” carbon emissions as its ultimate goal, major fossil fuel producers, especially Russia, will greatly diminish in power within two or three decades, assuming that they fail to diversify their economies and genuinely compensate for income derived from hydrocarbons. But in the next ten to twenty years, the energy transition will offer opportunities for petrostates to wield significant

geopolitical and economic power. Evidence of this has already been exhibited by their strategic foreign policy behavior in the wake of the oil crunch of 2021 following the COVID-19 pandemic, even before Russia's aggression in Ukraine.

In the pre-pandemic environment, faced with uncertainty about the outlook for oil and gas use because of climate policies, poor past financial performance, and pressure to divest from fossil fuels, the international oil companies' (IOCs') investments in maintaining the flow of oil and gas were at record lows.⁶ Western governments, investors, and the wider public favored low investment due to a pair of assumptions prevailing at the time: (1) that excessive upstream oil and gas investment would hinder the clean energy transition; and (2) that overinvestment in oil and gas would lead to stranded assets and possibly a new financial crisis. While the divestment movement was encouraged, there was a failure to sufficiently scale up clean energy investment, resulting in a very energy-intensive economic recovery from the COVID-19 pandemic.

For the next 10-20 years, petrostates will wield significant geopolitical and economic power

A study by academic researchers Mathieu Blondeel and Michael Bradshaw conducted in 2022 before the war in Ukraine provides a systematic analysis of the declared policies of the major IOCs for the upcoming transition. Their analysis demonstrates that in early 2022 the industry did not yet see itself facing an existential crisis, sometimes referred to as a "Kodak" moment.⁷ In reality, the companies' commitment to a fundamental shift to a low-carbon transition remained quite half-hearted. Hence, the energy industry underinvested in fossil fuels due to the world's climate ambition, but simultaneously failed to double down on clean energy investment.⁸ For instance, a 2021 academic study by researchers Green, Hadden, Hale, and Mahdavi finds no evidence of meaningful decarbonization efforts among the top 10 oil and gas firms (oil majors). Rather, the more ambitious among them, such as Shell and BP, are hedging, while others, such as Chevron and ExxonMobil, are resisting genuine decarbonization.⁹ On the whole, oil majors' spending is still largely focused on their legacy fossil fuels businesses. In 2018, industry on aggregate allocated just 1.3 percent of its total capital expenditure to low-carbon investments.¹⁰ At the same time, during the latest 2021-2022 oil supply crunch—and the resulting price spike—oil majors refrained from investing their windfall in new long-term oil and gas production as they would have normally done in prior cycles of high oil prices. As such long-cycle projects typically require several years to yield profits in a sector seen in decline, they opted for rewarding shareholders.¹¹

Yet, in conditions of robust demand for fossil fuels in the post-pandemic environment, experts warned that the level of IOC investment into new hydrocarbon

supply projects remained insufficient.¹² It would have been adequate if the world were on track to net zero emissions by 2050, but the world is nowhere close to this trajectory.¹³ More concretely, the IEA argued that hydrocarbon demand was not likely to fall quickly enough to hit net-zero by 2050, even if the Paris climate goals were met. Then, in an additional setback, it announced in 2021 that the growth rate of investment in energy efficiency was set to slow and was falling short of what was required to achieve the climate goal of net-zero emissions by 2050.

Such supply and demand imbalances led to widespread shortages that were most painfully evident in Europe. In 2021, oil and gas supplies failed to keep pace with the demand driven by the recovery from the coronavirus pandemic, which led to a full-fledged energy crisis. The resulting skyrocketing prices (wholesale prices of gas in Europe rose by more than 400 percent over the course of 2021) actually served to boost Russia's—and other petrostates'—revenues for two more decades or so, despite the clean energy transition's dent in them.¹⁴ Purely from a market perspective, higher prices had already accelerated the shift to clean energy even prior to Russia's 2022 war on Ukraine. But after the COVID-19 pandemic, and thus even before Putin's war, the EU's and other industrialized economies' failure to meaningfully curb hydrocarbon demand while, at the same time, discouraging IOCs' upstream oil and gas investment, resulted in higher oil and gas prices and a strong bargaining position for OPEC+, the cartel of 13 oil-producing countries.

In that respect, as researchers Jason Bordoff and Meghan O'Sullivan argue, petrostates like Russia have enjoyed a veritable feast before the famine. The situation has boosted their power by increasing hydrocarbon-revenue and giving extra clout to OPEC+, whose members, including Saudi Arabia, control most of the world's spare capacity and can ramp up global oil production or stymie it in short order. As a result, for the petrostates a new energy order has emerged that will last for at least the next ten to twenty years, one that is defined by both the risk of energy transition in the medium-to-long term and the leveraging of high hydrocarbon prices in the short term. Fossil fuels' share of the global economy dropped by just 1 percentage point between 2010-2019, despite plummeting clean energy costs, rapid advances in battery technology, and 25 years of high-level UN climate conferences. Plus, demand for fossil fuels is still growing in the Asia-Pacific region.¹⁵ In this new world, petrostates have and will continue to focus on building alliances and constructing a "containment order."

Petrostates Building a "Containment Order"

While many analysts have argued that the Eurasian hydrocarbon-addicted economies are likely to falter as a result of the energy transition,¹⁶ few have fully

appreciated the Eurasian petrostates' efforts to forestall the energy transition through strategic foreign policy change. This section illustrates how decarbonizing transitions away from fossil fuels and the incentive to keep cashing in on high oil and gas prices have reshaped commercial and foreign policy alliances among Central Asian petrostates.

China and Russia have been the region's main external partners in the effort to delay the energy transition through strategic foreign policymaking. The former looms large in Central Asia, helping to replace declining demand from Europe for Central Asia's fossil fuel. In Kazakhstan, Beijing has gradually grown its upstream investment presence over the last two decades and currently has a 24 percent stake in oil production and a 13 percent stake in gas production. China also built the Kazakhstan–China oil pipeline, which came on stream in 2006. Partly as a result of this development, it was reported in 2019 that Astana would divert some oil flows from Europe to China and that it would double its gas exports to China that same year.¹⁷ In the gas sector, China completed the construction of three parallel pipelines, each running almost 2,000 kilometres from Turkmenistan. These pipelines, which traverse Uzbekistan and Kazakhstan, marked the first major diversion of Central Asian gas resources from Russia-controlled, Soviet-era pipelines—to China, which still consumes the most primary energy in the world, with oil and gas use on the rise.¹⁸

**China and Russia
have helped seek to
delay the energy
transition**

It is not only Chinese developers, however, that are winning the hydrocarbon business. Russia has also made itself a useful and enthusiastic ally, not only in delaying the energy transition, but also in counterbalancing China's heavy energy investments in the region. Across the region, Russia's burgeoning external influence has focused on spurring joint ventures in hydrocarbon and nuclear energy development. Kazakhstan and Russia have recently signed a memorandum of understanding (MoU) to pursue construction of energy corridors to China and Europe and to establish joint infrastructure for the sale of compressed natural gas (CNG).¹⁹ According to the MoU, the energy ministries of Russia and Kazakhstan aspire to promote natural gas as a "bridge fuel" on the Europe–Western China international transport route.

In October 2021, Kazakhstan's President Kassym-Jomart Tokayev revealed that Russia's oil giant Lukoil would help his country develop Khazar, an oil field located next to the giant Kashagan in Kazakhstan's portion of the Caspian Sea.²⁰ Along with Russia's Rosneft, Lukoil is also the lead explorer in Kazakhstan's Karachaganak and the Tengiz oil and gas fields, the latter the world's deepest supergiant oil field. The Kazakh authorities are also in talks with Russia's state-owned firm Rosatom about the possible construction of a nuclear power plant.

Uzbekistan, too, has added nuclear power to its energy balance along with its push for renewable energy. There, the government is already working with Rosatom, a firm with close ties to the Kremlin. And in a remarkable foreign policy turn, Turkmenistan resumed selling gas to Russia in 2019 through a five-year contract envisaging annual deliveries of 5.5 billion cubic meters (Russia had previously halted gas imports from Turkmenistan in 2016 amid pricing disputes.) In 2021, before Russia's invasion of Ukraine, Moscow doubled the imports of natural gas from Turkmenistan, resuming levels seen prior to the 2016 dispute.²¹ Since the invasion and its stark energy turn away from Europe, Russia has been even more desperate to cling onto these deals.

In the last few years, collaboration in hydrocarbon investment *among* Central Asian economies has also intensified as they seek to tighten the ranks of petrostates against the backdrop of energy transition. In a remarkable sign of tightening relations, Iran, Azerbaijan and Turkmenistan signed a trilateral natural gas swap deal in November 2021 on the sidelines of the 15th summit of the Economic Cooperation Organization (ECO) in Turkmenistan's capital, Ashgabat.²² Iran and Turkmenistan had previously been locked in a gas dispute that hindered cooperation; Iran cites the pursuit of a more active "gas diplomacy" as the reason for its reconciled relationship with Turkmenistan.²³ Azerbaijan and Turkmenistan, too, have resolved their competing claims over oil and gas fields located in the Caspian Sea.

As the sixth-largest holder of gas reserves in the world, Turkmenistan is pursuing a gas export route diversification policy in four geographical directions: to the North (Russia), East (China), South (Afghanistan and Pakistan), and West (Iran, Caspian Sea and Azerbaijan, and onward to Europe). Ashgabat, however, faces significant challenges in implementing this strategy. Europe's ambitious "greening" policies mean that a Trans-Caspian pipeline to supply Turkmen gas to Europe is unlikely, and simultaneously the country's diversification of revenue sources has stalled. In such circumstances, the resumption of the Turkmen-Iranian gas agreement will allow Ashgabat to raise hydrocarbon revenues as well as diminish reliance on China, its main gas export market. In line with this diversification effort, and in addition to restarting gas trade, President Gurbanguly Berdimuhamedow has recently expressed readiness to renew partnerships with Russia in the sphere of oil and gas investment in the Caspian Sea.²⁴

An even more intense version of this dynamic played out in early October 2022, when the OPEC + alliance announced that it would cut 2 million barrels of output per day (bpd)—equal to 2 percent of global supply—a decision that came despite President Biden's pleas to Riyadh to ramp up output as the White House tried to rein in prices at the gas pump ahead of the midterm elections.²⁵ The move fueled criticism that the kingdom was colluding with Russia to drive prices higher and, indirectly, helping Moscow raise more resources for its war effort.

Aside from demonstrating that hydrocarbon revenue-reliant nations would not hesitate to use strategic foreign policymaking to fight the effects of energy transition, these developments also demonstrated that in a tight global oil market, restricting imports of Russian oil could only work if paired with government programs to curb oil demand altogether, so as to keep global prices down and put maximum economic pressure on Russia.

Energy Ordering and Power Projection Abroad

As I discuss above, the energy transition has driven Central Asian hydrocarbon-producing countries (Kazakhstan, Turkmenistan, Uzbekistan) to invest their political resources in forging limited intra-regional alliances, petrostate concerts, and cooperative energy security pacts. The goal of spurring investment in their untapped hydrocarbon and mineral supplies is to expand production and leverage national oil and gas reserves in the wake of a “sellers’ market” and in the presence of a still energy-thirsty East Asian market. Meanwhile, the structural transformation that would support growth in the non-oil and gas economy is too politically costly. Instead of reducing reliance on fossil fuels, the elites of Central Asia have strengthened existing alliances and built new ones to broaden revenue sources and decrease the pace of regional decarbonization.

Given the central role that the oil and gas sectors continue to play in the region’s economies, the objective of maximizing fossil fuel revenues continues to rank high in any policy decision and act as a constraint on foreign policy choices. Essentially, the oil and gas-producing nations of Central Asia will be more prone to foreign policy expediency and unpredictability to compensate for declining hydrocarbon revenues. In that respect, a reciprocal (informal) reinforcing relationship exists between domestic political factors and external, transnational economic inducements.²⁶ Vested domestic interests in smaller states who support the hydrocarbon business and have benefited from their informal economic links with nondemocratic great powers (i.e. China and Russia) have reason to press for maintaining and strengthening these economic ties, encouraging a cooperative foreign policy. These inducements have helped to shape the preferences and power of domestic vested interest groups over the long run, reaffirming and extending the region’s turn to both China and Russia.

As the pace of global decarbonization has hastened, the geopolitics of energy changed dramatically in the last few years, even before Russia’s war on Ukraine.²⁷

Ukraine combined with preexisting changes to trigger three distinct shifts in the energy order

These changes, combined with Putin's unexpected invasion of Ukraine, triggered three distinct shifts in the energy order. One of the big shifts is a new understanding about the dangers of energy interdependence, in turn reframing energy as a geopolitical security concern. Another is a shift in the notion of clean energy as a tool of "security of supply" and, thus, of energy power. Under conditions of "energy warfare" with Russia, European energy security has come not only from reducing dependence on Russian oil and gas, but from curbing energy usage and using more "in house" renewables. Third is a shift in Sino-Russian energy relations in the face of Russia's aggression, exacerbated by Xi's continued alignment with Putin.

Reframing Energy Interdependence

Russia's weaponization of Europe's gas dependency has problematized one of the cardinal principles of liberal economic theory—namely that economic interdependence fosters peace. And it could well be that this crisis leads to a radical reappraisal of the benefits of all trade dependency and interdependence in strategic goods.²⁸ For Europe, this might mean more securitization of energy supply policy and a paradigm shift to "Fortress Europe" mode. Until recently, key European nations had been taking steps to deepen gas interdependence with Russia.

Fossil fuel interdependence financed Putin's war machine

Yet in February 2022, Germany halted the Nord Stream 2 Baltic Sea gas pipeline project, and ever since policymakers in Europe have been disinclined to tie the continent to new external gas pipeline supplies, which have the characteristic of being long-horizon projects that change patterns of consumption and dependence in very intimate ways. While previous scholarship suggested that a breakdown in cooperation between Russia and the EU (or for that matter, Putin's costly war in Ukraine) was highly unlikely because of interdependence,²⁹ in some ways, fossil fuel interdependence between the EU and Russia financed Putin's war machine and created the conditions of energy trade securitization that has followed.

Partly, reframing energy interdependence with Russia does mean seeking new partnerships. Some have argued that offsetting the loss of much of Russia's gas supply and ensuring secure and affordable electricity for consumers will require tapping *other sources* of natural gas supplies by pipeline and investing in more infrastructure to enhance current pipeline supplies, at least in the near-to-medium term.³⁰ Besides beefing up pipeline gas deliveries from Norway and Algeria, other candidates for such new infrastructure development could include Azerbaijan and Turkmenistan. In an environment of already high

perceived geopolitical risk—and tight oil and natural gas markets—the EU may be reluctant to extend or form new interdependent relationships with undemocratic regimes that play outsized roles in these markets. That is why the biggest source of new gas supply to the continent has been imported liquefied natural gas (LNG), principally from the US. The cutoff of Russian supplies has left Europe heavily reliant on LNG, which is transported mainly by ship and is significantly more expensive than gas arriving by pipeline. Mostly, however, Europe has and will continue to prioritize “homegrown” clean energy as tool of energy security.

Thus far, the major lesson of the present gas crisis has appeared to be that a collective failure to reduce Russia’s gas market share in the EU has left the continent vulnerable to geopolitical blackmail. In the 2010s, Europe did create an internal gas market and increased its ability to move gas across the continent to help provide alternate supply to countries more dependent on Russia. It also built new LNG terminals and storage facilities. But as its import requirements increased, it did not quite manage to significantly diversify its gas supply sources away from Russia.³¹ Before the invasion of Ukraine, the general consensus among scholars, pundits, and policy practitioners was that, in valuing regulations that made the European market more integrated and competitive above reducing dependence on Russian gas for geopolitical reasons, the EU had sufficiently improved its energy security.³²

As a consequence, improved energy security in the EU prior to the war in Ukraine came not from reducing Russian gas imports—indeed, those imports consistently rose—but rather from privileging reforms that liberalized European gas markets and enhanced the EU’s reliance on “spot” market prices. In part due to the US shale gas revolution, the EU enjoyed a decade of bountiful cheap gas supplies which aided its regulatory and infrastructure reforms.³³

But the dynamics of a liberalized gas market—not unlike those of the oil market—could rapidly switch from conditions of low prices and bountiful supplies to high prices and a supply crunch. When European gas market conditions did shift even before the Ukraine war, they laid bare European regulators’ failure to put in place sufficient measures that would guard them from producers weaponizing interdependent gas relations. With the advent of the Ukraine war, as Russia started renegeing on existing contracts, an even more painful reassessment of the risks of gas interdependence began, which in turn reframed energy as a geopolitical security concern.³⁴

In this shift, however, rather than relapsing to old ways of forging or extending gas dependencies with non-Russian gas suppliers, Europe sought to avoid supply-centric responses. Conventional wisdom now had it that while it would be necessary to invest in some hydrocarbon supply to compensate for failing Russian supplies, this strategy would have to be reconciled with ever more

ambitious environmental frameworks, including those related to greenhouse gas emissions.³⁵ Clean energy sources brought their own geopolitical risks, but less energy would cross borders on a daily basis. This signaled a shift in the notion of clean energy as a tool of “security of supply” and, thus, of energy power. Consequently, questions about Europe’s energy autonomy now encompass both the security of its fossil fuel supply and its ability to accelerate the green transition.

“Clean Energy” Becomes a Tool of Energy Power

In the wake of the war and Europe’s energy crisis, the preexisting imperatives of (1) accelerating the pace of clean energy transition; and (2) curbing overall hydrocarbon demand both acquired new meaning for policymakers in Europe. They came to represent new tools in the EU’s energy security toolkit and thus a new source of energy power. More concretely, after Putin’s invasion, the clean-energy transition received both new prioritization and a rethinking among EU policymakers. Expediting energy efficiency and doubling down on clean sources of energy were now hugely significant, not only for environmental reasons but also as tools to blunt Putin’s hydrocarbon power.

In March 2022 Frans Timmermans, the European Green Deal commissioner, was quoted as saying that “creating your own energy resources is the smartest and most urgent choice to ensure security of supply.”³⁶ This rhetoric echoed a September 2022 statement by the European Commission’s President Von der Leyen, when she argued that along with demand reduction and diversification, “renewables are really our energy insurance for the future.”³⁷ Her speech focused heavily on increasing efficiency through demand reduction and smart savings of electricity, which can simultaneously reduce Russian leverage, counteract high energy prices, and curb carbon emissions to address climate change. In a state of total economic warfare, experts have argued that general demand conservation—and not just reduction of oil and gas imports from Russia—remains paramount.³⁸ This is because as long as fossil fuel demand remains steady, oil and gas markets tight, and the market in a crunch, oil and gas prices will remain high.

In other words, Russia’s oil and gas revenues will continue to soar over the next two to three years, even as the total volumes sold to the West tumble. Right now, for example, the price of gas in Europe is about four times what it was in 2021. Russia has cut flows to Europe by two-thirds but is earning the same revenue as it did a year ago.³⁹ Looking to the future, Europe’s sharp shift toward alternate sources of oil and gas and renewables means that Russia’s revenue from fossil fuels sales to the continent will eventually decline. But for now, Russia is enjoying the same revenues even as the volumes of its gas exports to Europe have strongly declined.

But reliance on “clean energy” also prompts new concerns. As countries such as Japan, the US and the EU invest more in the energy transition, some of that money will filter back to China given its prime position in the export of clean energy equipment. This is prompting a lot of anxiety, especially amid the recent proliferation of net-zero commitments, because these countries will make a transition that is very costly to them, and the economic benefit of that will be reaped disproportionately by China.

In China’s transformation from a poor developing country to the West’s main global competitor, Beijing has gained control over many of the critical materials crucial for clean-tech supply chains such as lithium and cobalt, rare earth minerals, and polysilicon, a key ingredient in solar panels.⁴⁰ This is a sector of great strategic importance, not just for economic competitiveness but, as clean energy becomes a source of energy power, also for national and international energy security. China is also the world’s largest battery producer, produces more than 70 per cent of all solar photovoltaic panels, half of the world’s electric vehicles, and a third of its wind power.⁴¹

The dual shifts in energy order discussed above—in the underlying character of energy interdependence and in the scope of clean energy as a tool of energy power—indeed serve to place Chinese power at the center of international order and trigger new sorts of insecurities and controversies over energy power and authority. This matters because Beijing is arguably no longer on the path to becoming a “responsible stakeholder” in the liberal international order.⁴²

The dual shifts in energy order serve to place Chinese power at the center of international order

Binding Xi and Putin Closer

Understanding China’s control over the inputs for many clean energy technologies and its dominant role in the processing and refining of critical minerals is key to recognizing why the Russia-China energy partnership creates growing pressures for the liberal international order. Below, I highlight two factors which partly explain why Beijing continues to tacitly support Moscow in its war: (1) China’s economy exceedingly depends on a continued supply of cheap hydrocarbons; and (2) China and Russia are both dominant players in zero-carbon nuclear power technology.

First, in a world with less and less fossil fuel usage, as demand peaks and then gradually declines, it is the lowest-cost producers—such as Russia—that will be able to keep selling their oil and gas the longest and at the most competitive

prices. As Bordoff and O'Sullivan discuss, many high-cost producers, such as those in Canada, could be priced out of the market as demand (and, presumably, the price of oil) falls.⁴³ Other oil-producing countries that seek to be leaders when it comes to climate change—such as Norway, the UK, and the United States—could in the future constrain their domestic output in response to pressure from investors, activists, and the wider public to reduce their contribution to climate change. As a result, petrostates that have very cheap low-carbon oil and gas—and that are both less dependent on the international financial institutions now shying away from fossil fuels and less susceptible to social pressure to limit production—could see their shares increase in a market that, for at least some time, will remain sizable but less crowded.

Even before Russia's war on Ukraine, this trend had already fueled an economic and normative divide between state-backed national oil companies (NOCs) and the Western integrated oil and gas companies (IOCs) that have helped shape the modern oil industry. Essentially, oil producers have been compelled to decide among three strategies: whether they wanted to become more diversified energy companies by investing in both renewables and hydrocarbons; or to focus on low-cost and cleaner oil and gas production to be the "last man standing" in the sector; or to pivot entirely to become providers of clean energy such as green hydrogen or renewables.⁴⁴ For example, Russia's Kremlin-controlled firm Rosneft calculated that it paid off to remain "the last man standing" as there was still a role to play in providing hydrocarbons. As the global energy transition hastens, this means that on a global scale, too, Rosneft's influence may grow.

In this gradual divergence between IOCs backing away from marginal oil and gas projects and state-backed NOCs continuing to invest in them, China stands to benefit by cozying up to state-backed oil and gas companies, especially Rosneft and Gazprom. If the EU's decarbonization was already transforming Russia's relations with major European partners, it is the 2022 war that has done irreparable damage to the decades-old symbiotic oil and gas relationship between Europe and Russia. The normative implications of the war (i.e. sanctions) have stripped Russian policymakers of any alternatives to selling their excess supplies of oil and gas to China at very attractive prices, thereby fostering the geopolitical alignment of Moscow and Beijing. Recent Sino-Russian deals in oil and gas show just that. In 2022, Chinese imports of Russian oil rose by 55 percent from the previous year, displacing Saudi Arabia as China's largest oil provider.⁴⁵ In the same year, Putin revealed that Moscow and Beijing had agreed on the main parameters of a new gas pipeline to China meant to replace Nord Stream 2. Construction of the so-called Power of Siberia 2, which would carry up to 50 bcm of natural gas to China from fields on the Yamal Peninsula, is due to start in 2024.⁴⁶ Meanwhile, China's overall trade with Russia hit a record \$190 billion in 2022.⁴⁷

Second, it is in the context of China's and Russia's growing leadership in nuclear power that we should examine the West's recent "return" to it. The urgency of addressing stubbornly rising greenhouse gas emissions, combined with Russia's disruption of global fossil fuel markets, has made Western policymakers take a second look at previously-made plans to retire nuclear power plants. For example, after long debates, nuclear energy and natural gas have been added to the EU's taxonomy via the Complementary Climate Delegated Act of January 1, 2023, meaning that they are earmarked as sustainable investments for the time being.⁴⁸ Even though in the short-term, resurrecting old coal plants has taken precedence over a revival of nuclear power, staunch opposition to nuclear power across Europe has somewhat eased amid Russia's aggression. Energy expert Giacomo Luciani commends this unmistakable change in sentiment both in Germany and in France given that, as he argues, achieving net-zero without the help of nuclear remains a pipe dream.⁴⁹ In the long run, Russia's weaponization of natural gas promises to reinforce this trend. But China and Russia have made great strides in nuclear power technology during a period in which the sector has been overlooked by the West.

In their move away from nuclear, in the last decade the United States, Germany, and other market and technology leaders have largely ceded the sector to Russia and China, with Russia becoming the leading exporter of civilian nuclear reactors today.⁵⁰ This will increasingly enable Moscow and Beijing to influence norms regarding nuclear nonproliferation and impose new operational and safety standards designed to give their own companies a lasting leg up in a sector that will need to grow as the energy transition unfolds.⁵¹

This may also enable Russia, which is one of world's largest producers of uranium, to transform itself into "a nuclear energy state" and diversify away from fossil fuels. There is some evidence that this might already be happening; as the Western nuclear industry flounders, Russia's Rosatom is building nuclear power plants on time and under budget around the world, while selling uranium to the United States. As Russian energy expert Thane Gustafson argues, after decades of neglect, the Western nuclear industry has lost much of its capability to build new nuclear power plants, or even (in the case of France) to maintain them, as skilled workers and experienced managers have left or retired. Conversely, the Russian nuclear industry stands out as a rare—indeed unique—case of a high-technology sector that has not only recovered from the end of the Soviet era and the chaos that followed but has developed an effective export strategy that has allowed it to prosper today as never before.⁵²

In the last decade, the nuclear sector has largely been ceded to Russia and China

China, meanwhile, has a vigorous domestic nuclear program entirely independent of Russia. China ranks first in the world in the number of units under construction, and it is moving quickly toward next-generation designs.⁵⁴

In sum, Russia's leadership in nuclear power and China's growing domestic market and ambitious plans to expand overseas may be a problem for Western policymakers, especially as the growing urgency to address climate change forces them to take a second look at their own nuclear power capacity. A resurgence of nuclear power would then combine with the national security imperative of reducing oil and gas use made evident by the Ukraine crisis, potentially giving Moscow and Beijing another powerful weapon in their quest to unravel the liberal world order.

Geopolitics—and Energy—in Flux

The long-term changes propelled by the clean-energy transition—in the distribution of power, the meaning of sustainable energy consumption, and the scope of dependence on geographically concentrated critical materials—is transforming the geopolitics of energy. With the rise of renewables, Russia's position as an energy superpower has shifted, a fact that is revealed by its leveraging of oil and gas in response to Western sanctions and by the October 2022 Russian-Saudi oil supply cut agreement to maintain high global hydrocarbon prices. Thus, even before the invasion of Ukraine, Russia and other petrostates have tried to stall the clean-energy transition through strategic foreign-policy making. Meanwhile, as Western firms have withdrawn from oil and gas investment for environmental reasons and in response to poor investment returns in the last few years, the market share of OPEC + has risen, giving them more clout.

The war in Ukraine has combined with these preexisting trends to produce three distinct policy effects. One is a new understanding about the dangers of energy interdependence, in turn reframing energy as a geopolitical security concern. Another is a shift in the notion of clean energy as a tool of “security of supply” and, thus, of energy power. Third is a shift in Sino-Russian energy relations in the face of Russia's aggression, exacerbated by Xi's continued alignment with Putin. Perhaps it is the Sino-Russian energy relationship that best illustrates how changes in identities and interests can, over time, produce subtle shifts in the behavior of states and occasionally trigger far-reaching but unexpected shifts in international order.

Even before the invasion of Ukraine, energy markets were tightly driven by a collection of fundamental supply and demand imbalances. As a result, energy prices soared, boosting the geopolitical influence of petrostates like Russia. As with past energy crises, this inflection point provided an opportunity for

change. After Russia's invasion of Ukraine, Western policymakers strongly pressed for accelerating the energy transition to achieve two objectives: to enhance their own energy security and reduce the flow of Moscow's energy revenues. This meant using more renewables and consuming less energy in the first place. Remarkably, thanks in part to mild winter weather in 2023, energy saving education campaigns in Europe have succeeded in blunting the edge of Putin's energy weapon.

However, the "no limits" strategic partnership between China and Russia has and will continue to disrupt the geopolitics of energy. Scholars and pundits continue to debate the extent to which China could seek to construct a rival order that is non-Western and non-liberal, and in doing so, the extent to which it may draw on other states that are similarly estranged from the existing system, like Russia. It is clear that by affirming its "no limits partnership" with Russia, despite the latter's aggression, China has taken more decisive steps to contain "Western hegemony" and promote a multipolar balance of power. In this context, Western policymakers would be well advised to take note of Russia and China's increasing leadership in nuclear power, a sector that will play a crucial role in the world's pathway to net-zero emissions.

The partnership between China and Russia has and will disrupt the geopolitics of energy

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ORCID

Morena Skalamera  <http://orcid.org/0000-0002-4806-6362>