

BRIEFER

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Climate, Ecological Security and the Ukraine Crisis: Four Issues to Consider

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INTRODUCTION

In an analysis released early this year, the Center for Climate and Security (CCS) noted that climate change and climate security risks are not separate from other security challenges facing the United States—instead, they are overlapping and interconnected.¹ The Russian invasion of Ukraine is no exception. Climate change is shaping the national security landscape against which this crisis is unfolding, from the tactical to the strategic level. The Ukraine crisis exemplifies the importance of integrating a climate security lens into foreign policy—while climate stress is not the catalyst for conflict in this case, without an understanding of climate and energy transition dynamics brought to the table, policymakers may get key analytic questions and their answers wrong while also missing opportunities for constructive policy interventions.

In this brief, we discuss four key areas of climate and ecological security that are linked to the crisis in Ukraine: 1) The need to accelerate the clean energy transition; 2) Degradation of Ukrainian ecological security; 3) Decreasing global food security; 4) Russia’s own climate security vulnerabilities.

THE NEED TO ACCELERATE THE CLEAN ENERGY TRANSITION

A powerful weapon in Russia’s arsenal is its production of fossil fuels. In 2021, European Union imports of natural gas from Russia accounted for around 45 percent of its gas imports and close to 40% of its total gas consumption.² Therefore, the Russian invasion of Ukraine has underscored the security imperatives of neutralizing this weapon by accelerating the global transition to clean energy. The Center for Climate and

¹ [“Taking Stock: Integrating Climate Change into U.S. National Security Practices in 2022,”](#) Erin Sikorsky and Brigitte Hugh, The Center for Climate Security, January 25, 2022.

² [“How Europe Can Cut Natural Gas Imports from Russia Significantly within a Year,”](#) IEA, 3 March 2022.

Security has written previously that decarbonizing is critical to prevent the long-term catastrophic security impacts of climate change.³ Given the current crisis, it is clear that such a move can provide geopolitical benefits as well. The EU’s new proposal for a faster energy transition is a good step in this direction.⁴ It is also important that the United States ensure any short-term interventions aimed at guaranteeing energy security in the midst of the crisis, such as increasing natural gas exports or releasing fuel from U.S. strategic oil reserves, do not slow or replace longer-term clean energy strategies. A strategy that relies primarily on replacing Russian fossil fuels with other fossil fuels will exacerbate national security risks to the United States by increasing climate impacts such as heatwaves, destructive hurricanes and wildfires that threaten US military readiness, compound global instability, and threaten American livelihoods.

This is not to say that transitioning from oil and gas is simple. One challenge is securing access to the critical minerals required for renewable energy production on a large scale. Here too there is an intersection with the Ukraine crisis. Russia plays a significant role in producing critical minerals such as copper, nickel, and platinum. For its part, Ukraine is a key source of gallium and germanium, used in solar panels, and is estimated to have significant untapped lithium reserves, a key component in the production of batteries for electric vehicles. The Biden administration has focused on securing resilient supply chains since it took office,⁵ and in late February 2022 announced new investments in domestic supply chains for the materials required for technologies like the motors in wind turbines and electric vehicles, and the metals required for battery storage.⁶ Onshoring alone is not enough to prevent security risks, however, as the extraction practices used to secure these minerals can negatively impact local communities, ecosystems, water access, and biodiversity. Therefore the Administration’s inclusion of programs to recycle critical minerals in its February announcement is a good step toward implementing circular economy solutions.

For all of these reasons, experts have warned⁷⁸ that the energy transition brings security risks of its own, including risks that those who benefit from fossil fuel production like President Putin may act aggressively to protect their interests. The United States must be prepared to manage such risks. However—the big picture is clear—the longer the United States waits to transition to clean energy, the harder it is to accomplish without substantial harm. Moreover, a slow transition guarantees more climate security hazards for more people around the world.

DEGRADATION OF UKRAINE’S ECOLOGICAL SECURITY

War is inherently destructive—for both people and the planet. Russia’s invasion of Ukraine not only has immediate and deadly impacts for civilians and combatants, but causes ecological damage that is likely to ripple across generations. Already, missiles have been reported to have hit the site of a radioactive waste disposal facility in Kyiv, thankfully missing critical infrastructure.⁹ Yet, other places have not been so lucky. Russia’s occupation of the closed Chernobyl Nuclear Power Plant led to recorded radiation increases of over 20 times their normal levels as heavy machinery dislodged contaminated soil in the exclusion zone.¹⁰ As of 9 March, the plant had lost power from attacks hitting the main power supply to the site. As the International Atomic Energy Agency noted, ensuring uninterrupted power supply to nuclear

³ Guy, Kate et al. “A Security Threat Assessment of Global Climate Change: How Likely Warming Scenarios Indicate a Catastrophic Security Future.” Product of the National Security, Military, and Intelligence Panel on Climate Change. Edited by Femia, Francesco and Werrell, Caitlin. The Center for Climate and Security, an institute of the Council on Strategic Risks. Washington, DC. February 2020.

⁴ [“What Putin’s war could mean for fossil fuels”](#), Somini Sengupta, New York Times, March 4, 2022.

⁵ [Executive Order 14017](#) “America’s Supply Chains”, Joseph R. Biden Jr., February 24, 2021.

⁶ [“Securing a Made in America Supply Chain for Critical Minerals”](#), The White House, February 22, 2022.

⁷ [“Green Upheaval: New Geopolitics of Energy”](#), Foreign Affairs, Jason Bordoff and Megan O’Sullivan, January/February 2022.

⁸ [Global Trends 2040](#), U.S. Director of National Intelligence, March 2021.

⁹ [“Update 3 – IAEA Director General Statement on Situation in Ukraine”](#), International Atomic Energy Agency, February 27, 2022.

¹⁰ [“Chernobyl: Why radiation levels spiked at nuclear plant.”](#) Victoria Gill, BBC, February 25, 2022

sites is crucial, and while at the time of this writing nuclear materials at the site appear to remain properly handled and cooled, maintaining power for the weeks and months ahead is essential.¹¹ Additionally, as of this writing, the Russians are controlling the Zaporizhzhia nuclear power plant after an initial attack which caused fire to break out.¹² At Zaporizhzhia, Europe's largest active nuclear power plant, reports indicate the Ukrainian employees continue to operate the plant under duress.¹³ This is an extraordinarily dangerous situation given the complexity of safely operating nuclear facilities and because of the active warfare the Russians are conducting in Ukraine.

Further, attacks against industrial and mining operations typically unleash pollutants into the air, ground, and water while urban attacks can damage life-saving sanitation systems, contaminate water supplies, and release harmful toxins from old buildings. Elsewhere, fighting risks damaging critical ecosystems such as the Black Sea Biosphere Reserve. As the February 2022 Intergovernmental Panel on Climate Change (IPCC) Working Group II report highlights, healthy ecosystems are some of our greatest assets in adapting to climate change.¹⁴ Their further destruction will reduce resilience to climate impacts in the long run.

DECREASING GLOBAL FOOD SECURITY

Climate change, along with conflict and COVID-19, has undermined food security around the world in recent years. With global food prices already hitting record highs in 2022,¹⁵ the conflict in Ukraine will further disrupt global food supply. Together, Russia and Ukraine account for one-third of global wheat exports, one-fifth of maize exports and 80 percent of sunflower oil production.¹⁶ Much of Ukraine's harvest, and products from Russia, including fertilizer, will be much harder to secure, likely resulting in widespread food insecurity and disruptions to the global growing season.

As of this writing, Ukraine's government has banned some crop exports so the food can be used at home, and ports typically used to ship out grains are closed. Future harvests are likely to be lost due to conflict itself, especially if the Russian forces prioritize the destruction of cropland as a way to induce Ukrainian capitulation.¹⁷ Even if cropland remains untouched, there is no one left to plant, cultivate, harvest, or ship the crops in a country which is on the defensive against an invader. Though conflict is unlikely to directly impact agriculture in Russia, the government may refuse to export at its usual levels in an effort to keep prices low at home given international sanctions.¹⁸

Many low and middle income countries, especially in the Middle East and Africa, rely on grain imports from Ukraine and Russia.^{19,20} For instance, in Egypt, 86 percent of the wheat used to supply crucial gov-

¹¹ [IAEA Statement](#), 9 March 2022.

¹² <https://www.npr.org/2022/03/04/1084477966/nuclear-power-plant-zaporizhzhia-ukraine>

¹³ ["Russia seizes Europe's biggest nuclear plant and blocks media websites."](#) Pavel Polityuk and Aleksandar Vasovic, Reuters, March 4, 2022.

¹⁴ [IPCC, 2022: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change](#) [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

¹⁵ ["The FAO Food Price Index rises to a new all-time high in February."](#) Food and Agriculture Organization of the United Nations, March 4, 2022

¹⁶ ["Russia attack on Ukraine set to hit global food supply chains"](#), Emiko Terazono, Judith Evans, and Hudson Lockett, Financial Times, February 24, 2022.

¹⁷ ["Russia and Ukraine are key exporters of food and energy. Will global prices spike?"](#) Cullen Hendrix, Washington Post, March 2, 2022.

¹⁸ Ibid.

¹⁹ ["A Russia-Ukraine War Could Ripple Across Africa and Asia,"](#) Alex Smith, Foreign Policy, January 22, 2022.

²⁰ ["MENA faces a crisis as the world's key wheat producers are at war"](#), Paul Benjamin Osterlund, Al Jazeera, March 1, 2022.

ernment-subsidized bread is imported from the two countries.²¹ Lebanon—which is still reeling from the port explosion in 2020 that took out some of its grain silos—imports approximately 50-60 percent of its wheat from Ukraine.²² The loss of Ukrainian wheat for countries with developing economies, especially those with fragile democracies, risks instability as rising prices for basic resources can spark discontent with governments and may cause a descent into conflict.²³

Ukraine and Russia also produce large amounts of global maize. Ukraine supplies approximately one-third of China’s corn used to feed the world’s largest hog herd,²⁴ which will ultimately affect global food supplies beyond grain. And, though most of the world is concerned with the price of petroleum oil—which will also impact the ability to move the remaining food supply²⁵—Ukraine is the world’s largest supplier of sunflower oil and a key producer of global vegetable oil.²⁶ The bottom line is that as climate change impacts such as drought and desertification have reduced the global food system’s resilience, adding conflict in Europe’s breadbasket to an already strained system will leave grocery shelves in fragile states spare.

RUSSIA’S OWN CLIMATE SECURITY VULNERABILITIES

At a press conference in January, President Biden noted that one of the challenges Vladimir Putin was facing was, “a burning tundra that will not freeze again naturally.” In other words, climate change is creating security vulnerabilities for Russia itself. Russia’s temperatures are increasing at 2.5 times the speed of average global warming, and Putin himself has acknowledged that permafrost melt could be disastrous to northern cities.²⁷ The new IPCC WGII report underscored this risk, noting that 85 percent of large settlements on permafrost worldwide are in Russian territory. The report said that the, “...ability of foundations to support structures has decreased by 10 to 40% relative to the 1960s in the majority of settlements on permafrost in Russia...and [are] further expected to decrease...”²⁸ At the same time, Arctic ice melt eliminates a natural defense of Russia’s northern borders, which could spur increased military build up.²⁹

If climate impacts go unaddressed in Russia, they pose serious threats to Russia’s population and economy. Russia’s Audit Chamber has warned that climate impacts could hit Russia’s economy with 3 percent GDP losses annually,³⁰ and even impact life expectancy for its citizens. When it comes to preventing the risks, Russia is lagging behind much of the world in mitigating the climate crisis. According to the 2022

²¹ [“Russian war in world’s ‘breadbasket’ threatens food supply”](#), Joseph Wilson, Samy Magdy, Aya Batrawy and Chinedu Asadu, AP News, March 6, 2022.

²² [“MENA faces a crisis as the world’s key wheat producers are at war”](#), Paul Benjamin Osterlund, Al Jazeera, March 1, 2022.

²³ [“Global food prices, regime type, and urban unrest in the developing world”](#), Cullen S. Hendrix, Stephan Haggard, Journal of Peace Research, February 18, 2015.

²⁴ [“Russia attack on Ukraine set to hit global food supply chains”](#), Emiko Terazono, Judith Evans, and Hudson Lockett, Financial Times, February 24, 2022.

²⁵ [“Russia’s invasion of Ukraine will likely ratchet American food prices even higher, experts say”](#), Laura Reiley, Washington Post, February 26, 2022.

²⁶ Ibid.

²⁷ [“Putin calls for Russian greenhouse gas emissions to be lower than EU’s”](#), Gleb Stolyarov and Olesya Astakhova, Reuters, April 21st, 2021

²⁸ Shaw, R., Y. Luo, T.S. Cheong, S. Abdul Halim, S. Chaturvedi, M. Hashizume, G.E. Insarov, Y. Ishikawa, M. Jafari, A. Kitoh, J. Pulhin, C. Singh, K. Vasant, and Z. Zhang, 2022: Asia. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

²⁹ [Emerging Threat: As the Arctic Melts, Russian Plans to Militarize Could Create a Nuclear Hotspot](#), Center for Climate and Security Blog, Jasmine Owens, August 26, 2020.

³⁰ [“Climate Change Will Reshape Russia”](#), Cyrus Newlin, Center for Strategic and International Studies, January 13th, 2021.

Climate Change Performance Index, Russia is ranked “very low” for its performance based on greenhouse gas emissions, renewable energy capacity, energy consumption, and climate policy.³¹ Though Russia’s 2021 National Security Strategy mentioned climate change nine times, and acknowledged risks of wildfire and infrastructure damage from a warming Arctic, it also maintained that foreign actors would use environmental protection and climate change as, “leverage to exert open political and economic pressure on Russia.”³² Ultimately, like other countries around the world, Russia’s long-term security is dependent on leaders that can move beyond a narrow perspective on climate risks and instead invest heavily in preparing for and preventing climate impacts, in partnership with other countries. Yet Russia’s invasion of Ukraine makes cooperation on climate or environmental issues difficult if not impossible—as illustrated by the early March 2022 decision by the other members of the Arctic Council to pause participation in meetings of the council or subsidiary bodies.³³

CONCLUSION

These four areas of concern highlight the importance of incorporating climate and ecological security perspectives into policy discussions related to geopolitical crises like the war in Ukraine. Multi-sectoral approaches that include functional as well as regional expertise will help policymakers manage compound risks, and prevent or minimize actions that inadvertently worsen climate or ecological security risks.

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³¹ “[Climate Change Performance Index 2022](#),” Burck et. al, Germanwatch, NewClimate Institute & Climate Action Network, November 2021.

³² “[Climate Change Finds a Place in Russia’s New National Security Strategy](#),” The Barents Observer by Atle Staalesen, July 6 2021.

³³ <https://www.state.gov/joint-statement-on-arctic-council-cooperation-following-russias-invasion-of-ukraine/>