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DISCUSSION PAPER

Advancing Natural Gas Reform in Ukraine

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Introduction

A prerequisite for Ukraine's economic and political success is reform of its energy sector. Enduring corruption and mismanagement in the energy sector have generated pernicious budget deficits, eroded sovereignty, jeopardized energy security, and limited economic potential. Although all post-Soviet states have encountered obstacles in transitioning to market economies, Ukraine has been remarkably slow to introduce market reforms, and its sclerotic energy sector is at the center of its economic dysfunction. Even after the fall of the Soviet Union, the Orange Revolution, and nine International Monetary Fund (IMF) loans conditional on reform, Ukraine's energy sector remains a drain on taxpayers, a playground for corrupt oligarchs, and an unattractive destination for international investment.

However, Ukraine now has a small but important window of opportunity. The 2014 Euromaidan Revolution—the series of pro-European demonstrations that culminated in Ukrainian President Viktor Yanukovich's removal—provided a mandate and framework for energy reform. Beginning in 2015, Ukraine moved to cut implicit subsidies on natural gas, adopted laws to restructure the state-owned oil and gas company Naftogaz, and halted imports of Russian gas.

These advances are welcome news not only for Ukraine, but also for the United States. A prosperous and energy-secure Ukraine, capable of standing up to Russian interventionism, would advance U.S. foreign policy objectives in the region. Recognizing this, Washington already provides technical, financial, and military assistance to Kiev.¹ The United States has focused particularly on encouraging Ukraine's energy-sector reforms, last year tasking the State Department with promoting the country's energy security with the Countering America's Adversaries Through Sanctions Act.

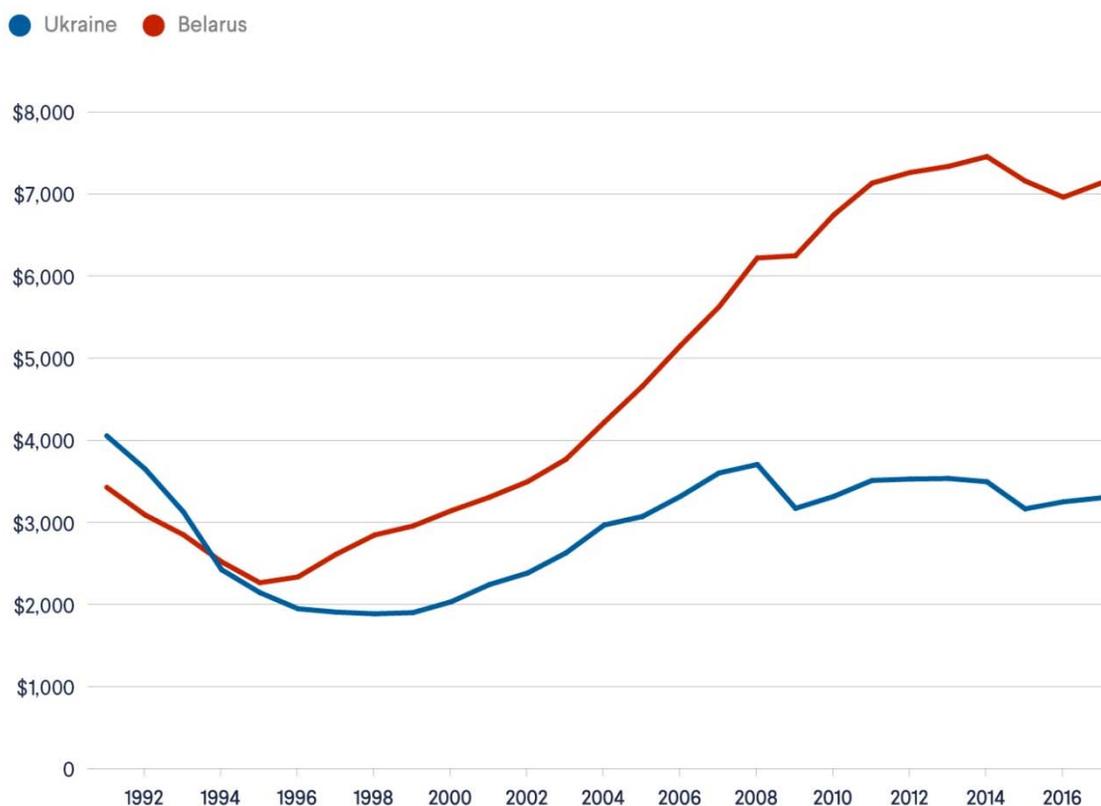
Unfortunately, Ukraine's energy-sector reforms to date do not go far enough. To achieve lasting reform, Ukraine must curtail its population-wide subsidies, reinforce the independence of its energy regulator, and dismantle the monopolies that exist in every segment of the natural gas sector. The benefits that would result from these steps are manifold. End consumers would enjoy better energy services and lower prices; the domestic energy sector would create high-skilled jobs and boost economic output; and the government would secure new revenue streams that could bolster national priorities such as defense and social services. Further reforms in Ukraine's energy sector could mean the difference between economic growth at the current sluggish rate of 2 percent and reaching 6 percent or more, which some experts suggest is possible.²

Ultimately, Ukraine will be the arbiter of its own success in energy-sector reform. But the United States can and should do more to help it achieve politically and technically complex reforms. Applying greater diplomatic pressure, providing technical assistance, and offering targeted financial incentives—and disincentives—could speed the pace of Ukraine's reform efforts. The Donald J. Trump administration, which has not yet articulated a clear strategy toward the country, should place energy-sector reform at the center of its relationship with Ukraine. Doing so would constitute a low-risk, high-reward strategy for Washington to counter Moscow's influence at the North Atlantic Treaty Organization (NATO) border without overcommitting to military options and antagonizing Russia. Moreover, by helping Ukraine reform its energy sector, the Trump administration may create opportunities for trade in energy equipment and services, advancing its strategy of U.S. energy dominance.

The Need to Advance Reform

Ukraine has not lived up to its post-independence promise. After the Soviet Union collapsed, Ukraine's gross domestic product (GDP)—measured in 2017 U.S. dollars—was only slightly lower than Poland's, its Soviet-controlled neighbor. Now, Poland's economy is more than four times larger than Ukraine's.³ By another measure, Ukraine's GDP per capita was higher than Belarus's at independence, but today it stands at less than half of Belarus's (see figure 1). Mismanagement and corruption in the energy sector are not solely responsible for Ukraine's relative economic stagnation, but they shoulder much of the blame. Ukraine's dependence on Russian gas is not due to a lack of natural resources; on the contrary, Ukraine has long been a gas-producing region. Ukrainian fields were the center of Soviet gas production until such production shifted to Western Siberia in the 1970s and early 1980s. Ukrainian production peaked at 68.5 billion cubic meters (bcm) in 1975 before steadily falling to 20.5 bcm in 2017.⁴

Figure 1. GDP Per Capita of Belarus and Ukraine, in 2017 U.S. Dollars



Source: World Bank.

Ukraine's gas reserves, the third largest in Europe, remain promising today.⁵ U.S. government agencies estimate that Ukraine holds between 900 bcm and 1,100 bcm in proven reserves (i.e., gas recoverable under current economic and technical conditions).⁶ In contrast to its historical production and contemporary proven reserves, Ukraine's domestic gas production is remarkably low. Only 2 percent of Ukraine's reserves are extracted annually, relative to an average of 6 percent for other gas producers.⁷ According to Naftogaz, the production cost of most Ukrainian gas is lower than what Ukraine pays for European or Russian imports and what it previously paid for Russian supplies.⁸ By another measure, outside experts estimated the cost of production for Ukrainian gas at \$3.30 to \$5.50 per MMBtu (the basic unit for measuring the energy content of fuel), which was \$2.70 to \$6.60 cheaper than import prices from either Europe or Russia in 2014 and 2015.⁹

The International Energy Agency has concluded that Ukraine could feasibly become energy self-sufficient by increasing gas production under the right set of energy policies.¹⁰ To incentivize gas production, the Verkhovna Rada, Ukraine's parliament, in December 2017 changed the tax code by significantly lowering royalty rates for oil and gas production for new wells to fall in line with European averages. It remains to be seen, however, how the government will enforce this change and how significantly it will affect production levels. Reforming Ukraine's gas sector has implications for the country's economic well-being and its national security.

ECONOMIC CONCERNS

Ukraine's gas sector is an unnecessary drain on the state budget in two ways. First, Ukraine has spent enormous sums on gas subsidies. Before the Euromaidan Revolution, Ukraine maintained two gas prices: a low, subsidized rate for household consumers and a higher, import-parity price for industrial consumers. This discrepancy not only provided the opportunity for illegal arbitrage, but also meant that the government absorbed most of the cost of household consumption. In 2014, Naftogaz reported a deficit amounting to 6.2 percent of Ukraine's national GDP, and Ukraine spent \$3.3 billion on gas subsidies.¹¹ According to the World Bank, the country's budget deficit was 4.6 percent that year and, according to the Stockholm International Peace Research Institute, Ukraine spent less on military expenditure—\$3.2 billion—than on gas subsidies in 2014.¹² Since the government moved to unify prices in 2016, subsidy spending fell by more than \$1 billion, and Naftogaz became profitable.¹³ However, no permanent mechanism exists to ensure that prices stay unified and near market levels. As a result, dangerously high subsidization levels could return. Price changes for households already lag behind those for industrial consumers. More alarming, former Prime Minister Yulia Tymoshenko, who currently leads presidential polls, has already declared her intention to reinstate subsidies if elected.¹⁴

Second, Ukraine loses hundreds of millions of dollars to graft in the energy sector. The National Anti-Corruption Bureau of Ukraine (NABU), the agency in charge of investigating corruption and preparing cases for prosecution, has found that corruption in the energy sector is more prevalent than in any other part of the economy. From the agency's creation in 2014 to mid-2017, its investigations have discovered that the oil and gas sector accounts for 73 percent—more than \$330 million—of energy-sector damages.¹⁵

NATIONAL SECURITY CONCERNS

Moscow has long exploited Kiev's dependence on Russian gas for foreign policy gains.¹⁶ The Kremlin's strategies include negotiating opaque, one-sided gas contracts to encourage continued economic dependence, allowing Ukraine to accumulate debts until strategically critical moments to demand political concessions, and simply shutting off flows when doing so serves Russian aims. Without increasing its domestic production of gas to cover its consumption, Ukraine will remain dangerously exposed to the threat of Russia cutting off supplies.

Ukraine has not directly imported gas from Russia since November 2015, but it has not fully disentangled itself from the Kremlin's use of gas as a geopolitical tool. Ukraine still imports Russian gas—although calculating the exact volume is difficult—through so-called reverse flows from Hungary, Poland, and Slovakia (see figure 2). These flows occur when Ukraine's European trading partners re-export Russian gas—their nearest, cheapest supply—to Ukraine.¹⁷ As Russia develops non-Ukrainian routes to export gas to Europe, it will be more difficult for Ukraine to access gas through these reverse flows, which currently use pipelines that cross Ukraine; as a result, the diversity of potential gas suppliers to Ukraine is poised to diminish. Nord Stream 2, which would pipe gas directly from Russia to Germany through the Baltic Sea, would significantly decrease Ukraine's role as an energy transit country to Europe. Combined with the Turkish Stream, another Russian pipeline project, Russia's state-owned oil and gas enterprise, Gazprom, could bypass Ukraine altogether. If Nord Stream 2 is constructed, Ukraine's current partners would receive Russian gas from a German hub instead of via Ukraine, dampening the feasibility for easy re-export back to Ukraine. Gazprom would have greater flexibility to negotiate transit volumes with German intermediaries that are limiting supplies that could be passed on to Ukraine. Capacity from Western Europe flowing eastward also remains limited.¹⁸ Although it would be more difficult than in the past, Moscow still retains the ability to provoke crises and sow division in the region as its dominant gas supplier.

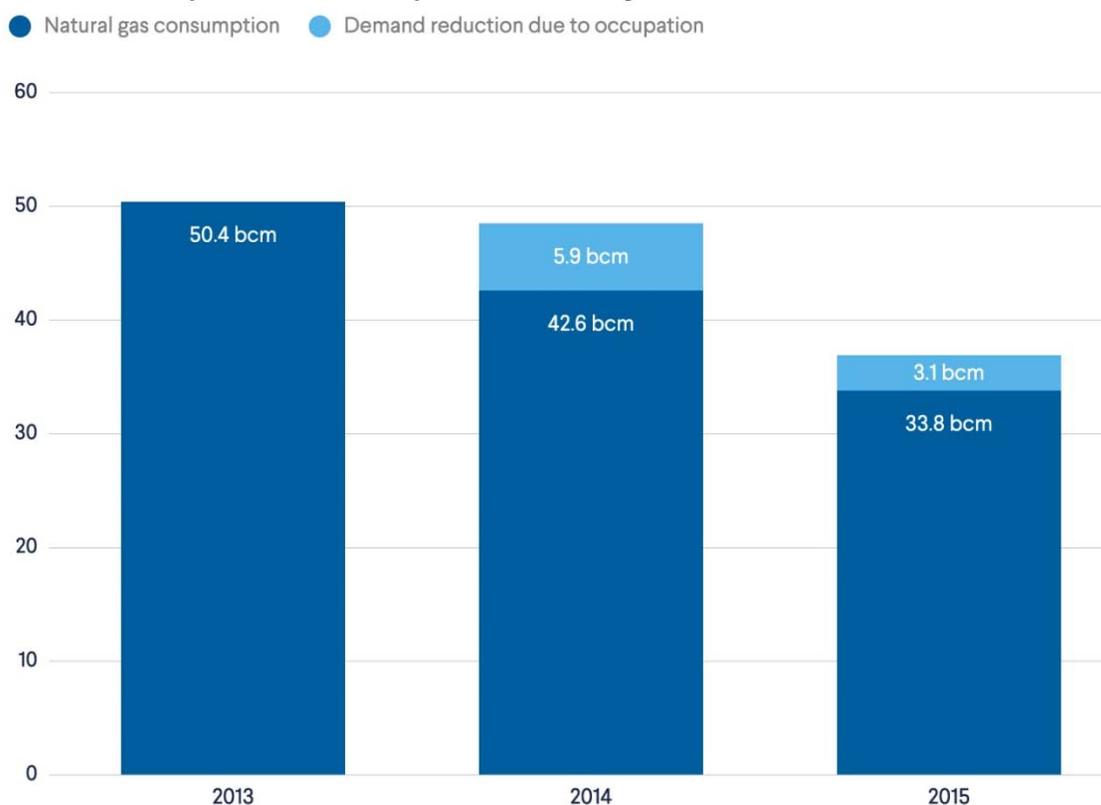
Figure 2. Gas Flows to and From Ukraine in 2017



Source: Ukrtransgaz.

The fact that Ukraine stopped importing Russian gas in 2015 should not spur optimism that Ukraine will not require such imports in the future, because the factors that enabled Ukraine to curb imports in 2015 may not persist. Although Ukraine's gas consumption has been decreasing since its independence in 1991, more recent drops are attributable primarily to economic decline and the war with Russia. The ongoing Russian occupation in Ukraine's east and the annexation of Crimea alone account for more than half of the total decline in gas consumption between 2013 and 2015 (see figure 3). The loss of Crimea and territories in Donetsk and Luhansk subtracted 9 bcm from Ukraine's overall gas demand between 2013 and 2015. Gazprom exported 4.1 bcm to occupied territories in Donetsk and Luhansk during the same period. Meanwhile, according to Russian sources, gas demand in Crimea has steadily increased since annexation.¹⁹ In the same period, Ukraine's industrial gas consumption fell by 40 percent, or 8 bcm, marking a broader decline in economic output resulting from the conflict. Ukraine's gas consumption is projected to stay flat through the 2020s, but that could change if the conflict ebbs, economic growth picks up, or energy efficiency efforts do not significantly advance.

Figure 3. Ukraine's Drop in Gas Consumption, Adjusted for Conflict



Source: Authors' calculations; Naftogaz.

Ukraine's available reverse flow capacity is technically capable of transporting enough gas from Europe to cover projected demand, but fully using this capacity might be a difficult, potentially impossible, task given that Gazprom has a legacy contract allowing it to obtain any capacity in Slovakia's pipeline system.²⁰ Increasing reverse flow capacity from Europe would benefit Ukraine, but plans to build new interconnection pipelines have been delayed.²¹ More broadly, non-Russian sources of gas production in Europe are tightening. Offshore North Sea production is in terminal decline, production from the Groningen field in the Netherlands will sharply drop before ending by 2030, and Europeans show scant enthusiasm for the hydraulic fracturing techniques needed for shale production. At the same time, declining coal and nuclear generation in the European Union is fueling demand for gas imports.²² Sustaining Ukraine's energy independence will therefore require further reform and increased self-reliance in the form of increased domestic production.

Ukraine could import some gas from Russia, but Gazprom has yet to prove itself a good faith supplier to Ukraine, even when dealing in small volumes. In March 2018, Gazprom refused at the last minute to supply any of the 5 bcm of gas it had agreed to sell to Ukraine, even though Naftogaz had prepaid for the gas in a contract that was ruled valid by the internationally recognized Stockholm arbitration court. As a result, all schools and universities were temporarily shut down, and the Ukrainian government requested that industrial firms curtail gas consumption.²³

Current Attempts at Reform

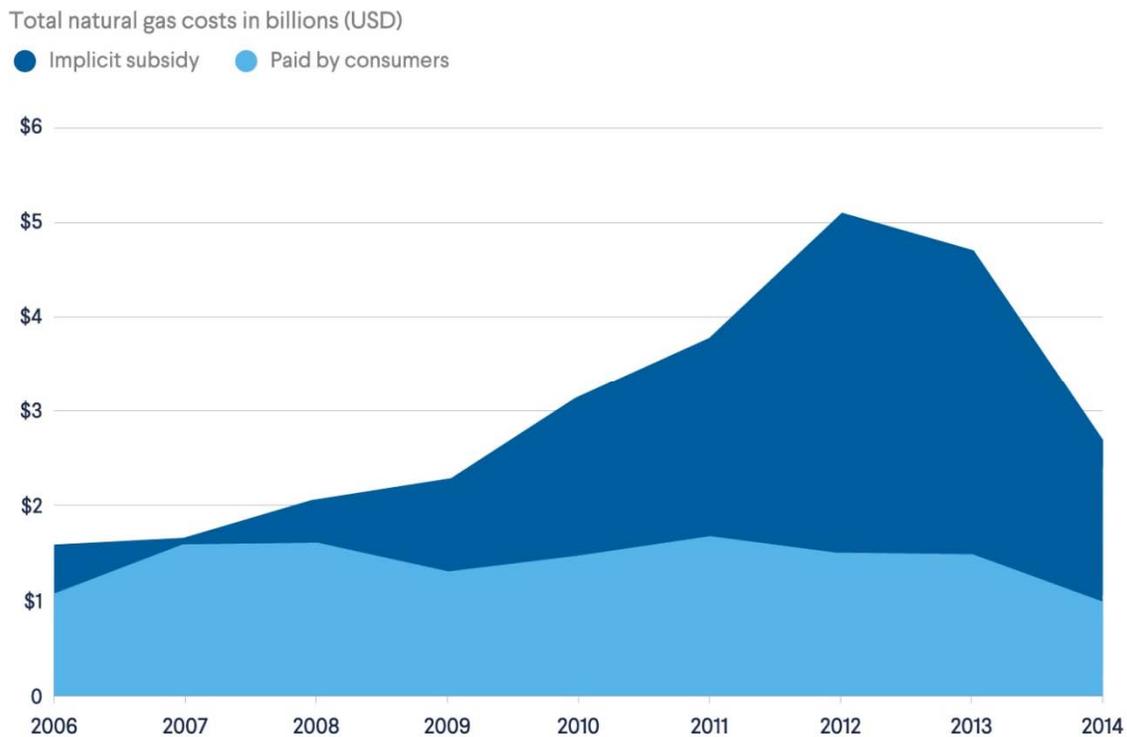
The current round of reforms that the Euromaidan Revolution kick-started have focused on eliminating implicit subsidies (e.g., price controls), establishing an independent energy regulator, and breaking up monopolies.

Broadly speaking, these reforms can be traced back to 2011, when Ukraine acceded to the Energy Community as a contracting party, which obligated Kiev to implement EU energy legislation and principles including the Third Energy Package.²⁴ Full implementation of the package would see third-party access to pipeline networks, market pricing, unbundling energy transmission from production and supply, and founding a transparent, independent regulator to enforce these rules. Ukraine has established frameworks for these reforms but has yet to implement them.

FUEL SUBSIDY REFORM

At its independence in 1991, Ukraine inherited a Soviet-style, top-down energy management system in which prices for industrial and household consumers were centrally set and no market existed for private companies to trade gas. Prices for industrial consumers have since been adjusted to import parity, but household prices remained subsidized and nearly constant until the Euromaidan Revolution (see figure 4).

Figure 4. Implicit Natural Gas Subsidies for Household Consumers



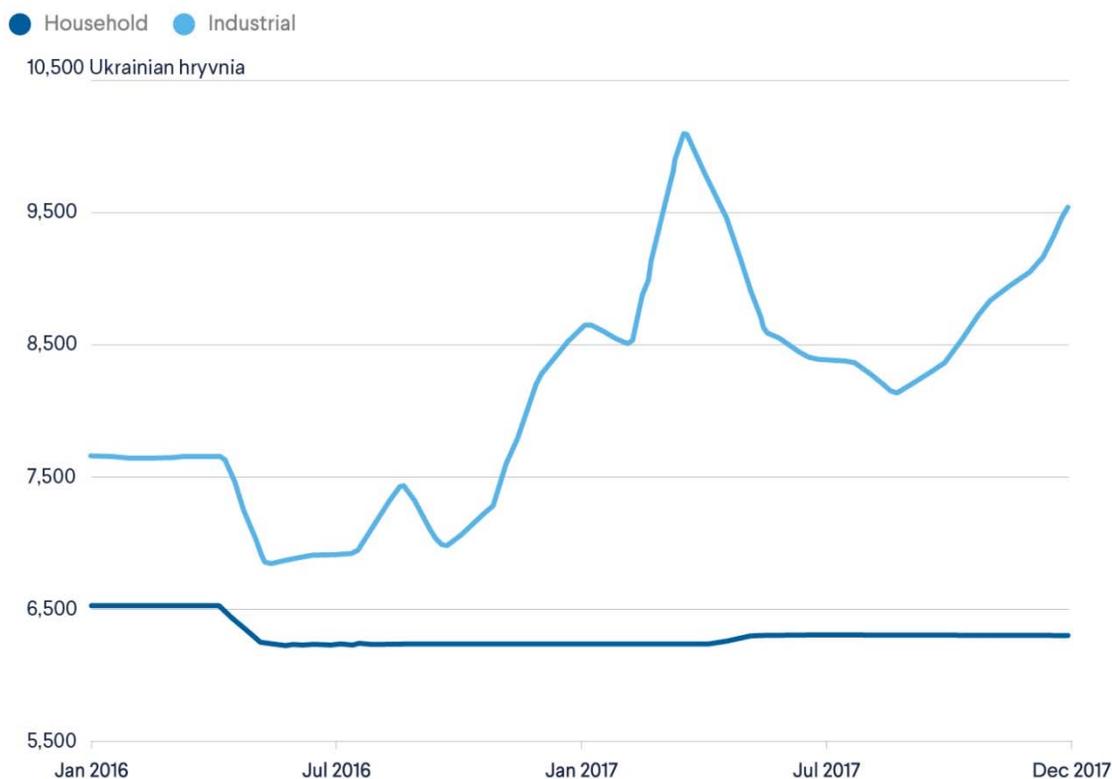
Source: Naftogaz.

The implicit subsidies for households were meant to serve, in part, as social assistance. It is widely accepted by economists, however, that energy subsidies are weak poverty reduction measures. On average, according to the IMF, it costs governments up to \$33 to deliver \$1 of fuel price relief to the poor, but the wealthiest, largest energy consumers reap most of the benefit.²⁵ Fossil fuel subsidies encourage wasteful energy consumption, increase local pollution, and worsen risks due to climate change. Gas subsidies in Ukraine, according to one Naftogaz energy efficiency official, result in over-consumption of 15 to 20 percent.²⁶

Maintaining such subsidies as import prices increased has allowed corrupt government officials and oligarchs to resell subsidized household gas to industrial consumers for illegal profits, and, more important, the accumulation of sovereign debts has forced Ukraine to make political concessions to Russia in exchange for debt forgiveness. In 1993, Ukraine's debt to Russia for oil and gas imports was already substantial enough that then President Leonid Kravchuk had to cede Ukraine's Black Sea Fleet and its nuclear warheads to Russia in exchange for financial relief.²⁷ Gazprom swiftly and without warning shut off the gas supply to Ukraine in 2006 and again in 2009 until Naftogaz paid back its accumulated debts. Facing extreme pressure and having little leverage of its own, Kiev agreed to Moscow's terms in 2010—a new discount on gas supplies in exchange for another geopolitical concession, the extension of the Black Sea Fleet's lease in Crimea until 2042. In November 2013, the Kremlin offered a \$15 billion loan and a reduction in gas prices from \$400 to \$268 per thousand cubic meters so that then President Viktor Yanukovich would reject Ukraine's EU association agreement.²⁸ Yanukovich initially accepted these terms, but demonstrations gathered in response, protesting corruption and demanding reform. Yanukovich fled to Russia in February 2014; three months later, Ukrainians elected Petro Poroshenko to the presidency.

Until that point, no real attempt had been made to dismantle Ukraine's expensive gas subsidies, partially because of their popularity. This changed in April 2016 when the Ukrainian government, to meet the conditions of its IMF loan, moved to unify gas prices.²⁹ This reduced energy subsidy spending, but household prices are still heavily regulated. Prices for industrial consumers now change in line with market levels, with prices reported by Naftogaz serving as benchmarks. Household prices are set by the Cabinet of Ministers, which updates them every six months, but the mechanism lacks any enforcement that would compel them to do so. Household prices have essentially not increased in two years.³⁰ No policy is in place to prevent the government from fully reintroducing gas subsidies, a likely direction as market prices increase (see figure 5).

Figure 5. Growing Disparity Between Wholesale Natural Gas Prices for Households and Industrial Consumers, in Ukrainian Hryvnia



Source: Naftogaz.

Furthermore, in a move to balance fiscal stability with social welfare, Ukraine introduced targeted gas subsidies for citizens in need of assistance. These subsidies, however, are hardly narrower than the system they attempt to replace. Approximately 60 percent of Ukrainians qualify for them, and no unified customer registry is in place to verify whether recipients qualify for assistance or even exist.³¹ Subsidy payments often are made to oligarch-run regional distribution companies known in Ukrainian as *oblgazes*, via their retail supplier subsidiaries, known as *gazzbuts*, rather than directly to consumers, making the system easy to exploit with false claims. In late 2017, the Cabinet of Ministers declared a change that would shift subsidy payments from *gazzbuts* to households, but it has yet to be implemented.³²

INDEPENDENT MARKET REGULATION

In 2016, President Poroshenko signed a law formally reestablishing the National Energy and Utilities Regulatory Commission of Ukraine (NEURC) as the sole authority for regulating the country's gas and electricity.³³ Until then, NEURC had operated under the president, who had the authority to dissolve the commission. This legal change also gave NEURC the authority to carry out investigations and impose penalties.

Today, NEURC is ostensibly aligned with the provisions of the Third Energy Package; in reality, Ukraine has yet to establish a body to effectively and independently enforce market rules that encourage competition. According to the European Commission, an energy market regulator must be a legal entity independent from both government and industry participants and have authority over its budget, the ability to issue binding decisions to companies and impose penalties, and the mandate to require accurate data from market operators and suppliers.³⁴ The 2016 law requires that NEURC be funded by fees paid by regulated businesses into an independent budget, which cannot be used for other government activities. However, in 2017, NEURC was instead funded from the government's general budget because the 2016 law was not yet in force. The law also mandates that NEURC have seven commissioners competitively selected by a committee composed of two presidential representatives, two representatives from the Verkhovna Rada, and one from the Cabinet of Ministers submitted by the Ministry of Energy and Coal Industry. Commissioners require approval from at least three committee members but are still ultimately subject to presidential approval.³⁵ In the second half of 2017, no new members were appointed, preventing the commission from carrying out its regulatory duties and bringing into force energy market rules due to a lack of quorum.³⁶ In December 2017, the parliament, undermining the competitive appointment process, bypassed the selection committee by allowing the president to directly appoint commissioners.³⁷ Ukrainian, European, and U.S. government agencies, companies, and nongovernmental institutions interviewed by the Energy Community have expressed concerns that some committee members are not independent from the president.³⁸

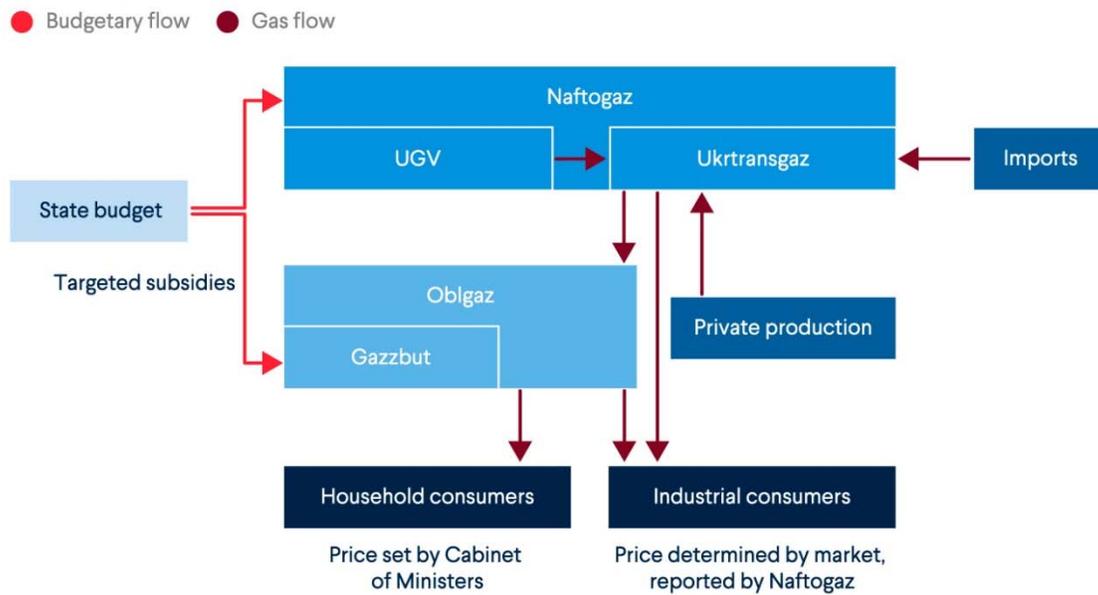
Although the new law has increased energy-sector independence and transparency to some degree, the government retains its ability to undermine market rules. In April 2017, at the request of the president and prime minister, NEURC suspended its market-based gas distribution tariff methodology, which would have raised gas delivery costs.³⁹ Compounding this, the Cabinet of Ministers has undermined the commission by choosing not to publish its decisions in *Uryadovy Kuryer*, the Cabinet of Ministers' official newspaper.⁴⁰ NEURC's official decisions cannot take effect unless they are published in that paper.

MARKET UNBUNDLING AND DEMONOPOLIZATION

Unbundling Naftogaz's transmission system from its production and supply assets has been the centerpiece of Ukraine's current energy reforms. The Third Energy Package mandates that a country's gas transmission system operator—in Ukraine, Naftogaz subsidiary Ukrtransgaz—must be independent and separate from production, supply, and distribution activities. Because Ukrtransgaz and Ukrgasvydobuvannya (UGV), another Naftogaz subsidiary that produces 75 percent of Ukraine's gas, both belong to Naftogaz, Ukraine is not compliant with this measure (see figure 6).⁴¹

Unbundling is fundamentally a monopoly-breaking measure. The Third Energy Package is designed to promote competition by preventing transmission system operators from favoring their own production and compelling them to guarantee nondiscriminatory, third-party access to infrastructure such as pipelines, which are held under natural monopolies. According to the Energy Community, NEURC's efforts to implement tariff methodology in line with third-party access principles have been stymied by political interference.⁴²

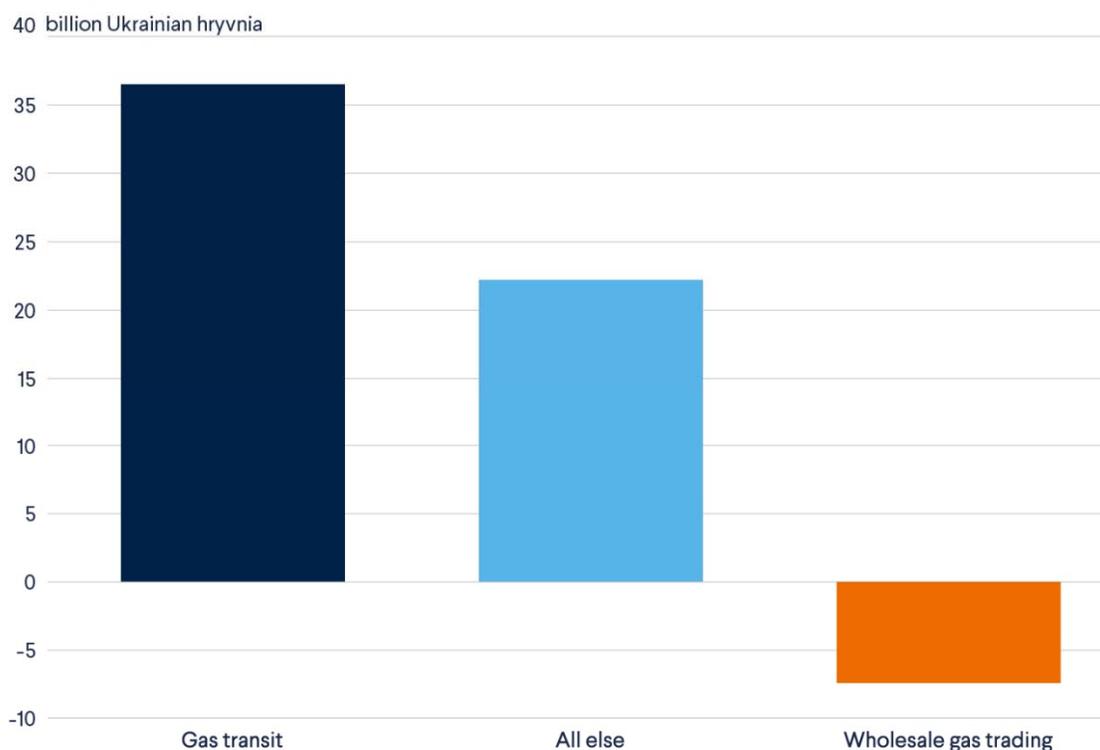
Figure 6. Simplified Structure of the Ukrainian Natural Gas Market



Source: Authors' illustration based on information provided by Energy Community and Naftogaz.

Without separating transmission from state production and supply, it is difficult to prevent the pipeline system from favoring UGV over private producers and Naftogaz over other suppliers. Ukrtransgaz's lucrative transit fees represent the largest share of Naftogaz's profits; UGV gas is sold at a loss in the wholesale market (see figure 7). Conversely, according to some domestic experts, because Ukrtransgaz is funded by user fees, obstructing third-party access would likely decrease already low investment in Ukraine's national pipeline infrastructure, which will require additional investment for maintenance and modernization.⁴³

Figure 7. Naftogaz Net Profits by Activity in 2017, in Billions of Ukrainian Hryvnia



Source: Naftogaz.

Nominally, Ukraine has already taken steps toward separating its gas transportation system from Naftogaz. In February 2018, the Cabinet of Ministers approved the eventual transfer of Ukrtransgaz's assets to a new company, the Main Gas Pipelines of Ukraine (MGU), under the Ministry of Energy and Coal Industry. Despite an independent supervisory board, it is unlikely that the ministry, a body of the Cabinet of Ministers, will cede much independence to MGU. Given that some ministers believe that retaining Ukrtransgaz's transit fees is critical to keeping Naftogaz solvent, and in light of the lack of implementation in the unbundling process so far, progress on this front could stagnate or backslide.

Ukraine has attempted to tackle government monopolies in the gas industry, but private gas monopolies have largely escaped scrutiny. By 2012, most of Ukraine's *obligates* moved away from Naftogaz ownership and offered shares to private investors. This privatization process, however, did not produce competition in Ukraine's gas sector. Dmytro Firtash, a Ukrainian oligarch with deep ties to Russia, won fourteen of the seventeen bids and today controls 70 percent of Ukraine's gas distribution.⁴⁴

Private monopoly power is enhanced by Ukraine's improper application of so-called public service obligations in the gas sector. Public service obligations are legal mandates for a government to provide services in the general interest, such as postal services, transportation, or, in this case, energy. Ukraine's public service obligation for gas nominally exists to guarantee that reliable, affordable fuel and heating are supplied to all consumers. In practice, it obliges Naftogaz to sell gas at the price regulated by the Cabinet of Ministers to *gazzbuts* at a loss, which, in turn, should supply households (see figure 6). However, according to Naftogaz, *gazzbuts* do not accurately disclose how much

gas is actually consumed and how much is received by social subsidy recipients.⁴⁵ The lack of widespread metering compounds the problem, allowing companies to resell excess gas or make false subsidy claims for government reimbursements.⁴⁶ In addition, UGV is required to sell the gas it extracts to Naftogaz, creating an artificial monopoly in supply. The Energy Community and World Bank have ruled that Ukraine's application of public service obligations does not comply with market rules and EU regulations. The system's lack of transparency invites corruption in entrenched monopolies and limits Naftogaz's ability sell gas to new retail suppliers, restricting competition.

Exploration and Production Licenses

Ukraine's byzantine system for issuing licenses for oil and gas exploration and production discourages new participants from entering the market. Under the Subsoil Code and the Law on Oil and Gas, companies must obtain exploration and production licenses through a bidding process. According to industry experts, the process is exceedingly difficult and not competitive.⁴⁷ Companies can bypass competitive auctions entirely through myriad exemptions or by entering into a production sharing agreement (PSA) with the government. In the last three years, more than 80 percent of exploration blocks by area were issued without auction.⁴⁸ Although PSAs provide regulatory stability and governmental assistance, they are susceptible to corruption because of their noncompetitive allocation.

New licenses can take years to obtain, and firms hold onto licenses without exploring fields to limit competition. Until recently, obtaining an exploration license did not even guarantee the right to extraction, as it does in most countries. Instead, companies were required to obtain a separate mining allotment, eliminating the incentive for companies to take on the risks associated with exploration. This is especially true in Ukraine, where the State Service of Geology and Mineral Resources, which manages the process for obtaining licenses, provides little detailed information about geological formations. Until recently, companies had to obtain forty-four approvals and sixteen government agency permits, a process that took three and a half years for greenfield (i.e., unexplored) sites and one year for each new well.⁴⁹ In March 2018, President Poroshenko signed a law reducing the number of approvals and permits required and discontinuing the duplicative mining allotment. How the provisions of this law will be enforced is yet to be seen.

In addition to the difficulties of issuing new licenses, Ukraine also has a problem with existing ones. In many cases, companies with political influence obtain exclusive, long-term exploration licenses but do not use them. The length of such licenses and lack of penalty enforcement for inaction are unusual relative to international standards: in Ukraine, licenses can last up to twenty years for onshore fields and thirty years for offshore ones, even if the companies never explore them.⁵⁰ Companies hold on to these licenses for a variety of reasons, such as restricting supply or positioning themselves as an attractive target for eventual partnership or acquisition. This practice discourages competition, unnecessarily limits gas production, and undermines national energy security.

The Need for Continued Ukrainian Energy Sector Reform

The fact remains that the Ukrainian energy system enables corruption and limits domestic gas production to below what it should be. Outrage over corruption was a primary motivation for the Euromaidan Revolution, but oligarchs' influence remains prevalent in the country. Many oligarchs involved in state capture—the form of corruption in which special interests influence government decisions to their advantage—remain active in Ukraine's energy sector and broader politics. They have avoided prosecution due to the country's lagging judicial reforms and by retaining a strong media presence that they can leverage as a political instrument. For example, Firtash is now under house arrest in Austria on suspicion of bribery but retains his holdings in Ukraine.

It is unlikely that Ukraine can eliminate corruption entirely, but it can minimize the space for it and work toward transparency. Ukrainian lawmakers and government officials can adopt new goals that build on the existing system to advance reforms that would revitalize the gas sector. To get there, the next round of reforms will need to accomplish the following.

DEPOLITICIZE SUBSIDIES

Ukraine has made some advances in gas subsidy reform, but progress so far amounts to the first step. To achieve lasting and meaningful reform, Kiev will need to completely and permanently eliminate population-wide subsidies while refining its system for distributing targeted social subsidies.

The Ukrainian government has yet to depoliticize gas prices. As long as the power to change prices is in the hands of politicians, then special interests, corrupt actors, and oligarchs are free to influence the government to change prices contrary to market principles and the national interest. Such has been the case in other countries that attempted to eliminate fossil fuel subsidies only to later bring them back. Namibia, under pressure from a powerful constituency of taxi drivers, and Brazil, amid high inflation in 2004 and again during a truck drivers' strike in 2018, both reversed their fuel subsidy reform programs.⁵¹

Kiev can instead follow successful examples of governments that yielded pricing authority to an independent regulator. For example, reforms in South Africa in the 1950s and in Turkey in the 1990s remain intact today. Under those arrangements, an independent regulator set fuel prices according to a formula that linked domestic prices to international benchmarks.

Ukraine could depoliticize gas prices by yielding full pricing authority to NEURC, which already sets transportation and distribution tariffs. Under this new system, the Cabinet of Ministers would no longer administratively set prices; instead, NEURC would implement a single automatic pricing mechanism for all consumers, including industry and households. NEURC's pricing formula—linked to regional market prices—would automatically and transparently update each month.

To increase fiscal stability while maintaining social welfare, the Ukrainian government can overhaul its targeted subsidy program. First, the government can follow through on legislation that would transfer payments as cash directly to consumers to decrease the risk of graft. Second, the Ukrainian government could create a comprehensive registry of social subsidy recipients to verify

payments. Actively maintaining, updating, and auditing this database would help the Ukrainian government reduce subsidy spending without sacrificing social assistance.

The Ukrainian government risks political backlash and renewed protests if it raises consumer prices haphazardly. To head off civic discontent, Ukrainian policymakers can assuage concerns by communicating these changes broadly in a public information campaign.

ESTABLISH REGULATORY INDEPENDENCE

For Ukraine to depoliticize gas prices, NEURC needs to be politically independent. NEURC has yet to gain full regulatory independence, even though the 2016 Law on the National Energy and Utilities Regulatory Commission of Ukraine should have given the commission such authority.

First, the Verkhovna Rada can amend legislation to cement NEURC's independence from the purview of the president and Cabinet of Ministers by eliminating the possibility of direct presidential appointments, a measure introduced when NEURC lacked a quorum. Second, the parliament could specifically ensure that the commission is adequately funded by user fees in an independent, apolitical budget as required by law. Third, pending a case in Ukraine's constitutional court, the parliament could also redesign the selection committee so new commission members can forgo the need for presidential approval. This process could include input from reliable groups such as civil society organizations and—for a limited time—international institutions such as the European Bank for Reconstruction and Development (EBRD) or Energy Community so that their voices are not only heard but also formally counted. Fourth, NEURC's decisions could automatically enter into force rather than after the Cabinet of Ministers' approval on their inclusion in the *Uryadovy Kurier*.

DISMANTLE MONOPOLIES

Separating Ukrtransgaz from Naftogaz and breaking up monopolies would go a long way toward boosting competition and investor confidence. Ukraine can follow through on its commitment to make its gas transmission assets independent by divorcing them from Ukrtransgaz and transferring them to MGU. Further, it could designate MGU as a transmission system operator fully independent from the Ministry of Energy and Coal Industry and tasked with providing first-come, first-serve service to all market participants based on NEURC's entry and exit tariff schedule, which establishes prices to book capacity in the gas transit system.

In the mid-1980s, the United States similarly unbundled its interstate pipelines, requiring pipeline operators to grant nondiscriminatory access so that local distributors purchasing gas from far-away producers would need only to pay for the pipeline capacity to transport it. This move reduced prices by increasing supply flexibility and stimulated infrastructure investments. The European Union more recently passed regulations to unbundle vertically integrated gas companies and mandate third-party pipeline access. As it has in the United States and European Union, unbundling could help Ukraine create an attractive environment in which new companies can invest and participate in the gas market without facing unfair competition from state-owned enterprises.

Ukraine can embrace several measures to reduce Naftogaz's distorting effect on the market. First, it could adopt digital platforms to make pipeline access tariffs and real-time pipeline capacity accessible and transparent so that all market participants have equal access to information. Second, the government could gradually eliminate the public service obligation that grants regulated prices for

gazzbuts and could open the wholesale and retail markets to new participants. Third, Ukraine could continue to work with U.S. and EU advisors to build up NEURC's capacity to implement and enforce EU energy legislation.

Simplify the Licensing Process

Ukraine could streamline the process for obtaining exploration and extraction licenses. The country's complex licensing system is a high barrier to entry for private producers—especially foreign companies—without an inside track. To be sure, the ongoing war in the east has also dissuaded foreign investment, but Ukraine would not be the first conflict zone to host international oil and gas companies.

Although Kiev recently passed legislation that reduced the number of approvals required and canceled the mining allotment, it could make additional changes to further simplify the system. The State Geological Service could standardize the terms and timelines for exploration licenses, allowing two years for onshore exploration and five years for offshore—renewable on demonstrated progress—to remove the incentive for firms to hold onto licenses without promptly beginning exploration. If a company makes no proven progress during the length of the license, that license would return to the state to be auctioned again. The State Geological Service could create a publicly accessible online database of licenses so that license issuances are transparent. The database would include information about length of the license, status of implementation, and basic geological data so that other interested companies could determine whether licenses are valuable but inactive, and could therefore petition the state to submit it to a new auction.

Ukraine could also eliminate loopholes to improve competition in license auctions. In the absence of an auction, no firm mechanism is in place to prevent corrupt government officials from awarding licenses to oligarchs or firms in which they have a stake. Ukraine could eliminate all auction exemptions and issue smaller licenses on a trial basis online via ProZorro, the national electronic auction system for public procurement, as it builds capacity for larger auctions. ProZorro has been effective in reducing corruption in public procurement because its platform is accessible and transparent. Kiev could set limits for issuing PSAs only to exceptionally complex, risky projects with large capital expenditures and uncertain, but potentially lucrative, returns. Ukrainian policymakers could consult with experts from the United States, Canada, Norway, United Kingdom, and the IMF to develop best practices that increase the societal benefit of PSAs. To further speed licensing, Ukraine could designate a single agency in charge of helping companies navigate the licensing process. Such a one-stop shop like the one that the Alberta Energy Regulator created in western Canada would lower barriers for new market entrants by serving as an advocate that helps them navigate the regulatory process and secure relevant approvals.

Prioritize Transparent Privatization

To further reduce Naftogaz's outsized role in the upstream sector, Ukraine could cautiously privatize some of UGV's production assets to open more space for independent producers. This process would be precarious given Ukraine's past privatization failures. In Ukraine's case, privatization efforts have not encouraged competition but instead increased market concentration by transferring state assets to already dominant private companies. Nevertheless, gas-sector privatization, if careful and well designed, could help promote competition and increased gas production.

Ukraine could avoid the pitfalls of its past failures by empowering its State Property Fund (SPF), the agency tasked with generating lists of state assets for privatization and carrying out auctions. As it stands, the fund does not have the capacity to value most state assets and, like NEURC, is subject to political interference. Kiev could invite international advisors to aid the SPF in increasing its political independence (using the same measures prescribed for NEURC) and in developing best practices for privatization. The government could also use ProZorro to slowly and transparently sell off Naftogaz's smaller assets as the SPF builds up capacity to value and auction large assets as required by the 2018 Law on the Privatization of State Property.⁵² A few smaller—but careful and successful—privatizations would yield useful lessons for larger-scale auctions and help instill investor confidence. Privatization should aim to increase competition and domestic gas production rather than just receive short-term cash injections.

Recommendations for U.S. Policymakers

Ukraine will be the ultimate arbiter of its progress, but U.S. policymakers should continue to provide aid and assistance to help break the vicious cycle of corruption. After the Euromaidan Revolution, a U.S.-led team of international energy specialists helped Ukraine draft a resiliency strategy, known as the Winter Action Plan, to address energy needs during colder months. To this day, the State Department's bureaus of energy resources and European and Eurasian affairs, the U.S. Agency for International Development, and Department of Energy, among others, are all working toward promoting Ukraine's energy reforms.

The United States should build on these efforts and broaden them into a sustained strategy to systemically revitalize Ukraine's energy sector. Although corruption is endemic in Ukraine, government officials there are ready to advance reforms if equipped with the proper tools. U.S. officials should help their Ukrainian counterparts advance reform using three primary policy tools: diplomatic pressure, technical assistance, and financial support for specific reforms.

INCREASE DIPLOMATIC PRESSURE

Senior U.S. policymakers have not put appropriate diplomatic pressure on their Ukrainian counterparts to speed the pace of energy-sector reforms. President Obama, forgoing travel to the country, relegated the question to his vice president, Joe Biden, who was never able to effectively pressure President Poroshenko.⁵³ So far, it seems that the Trump administration has only emphasized resolving the ongoing conflict in Ukraine's east and providing military aid.

To demonstrate its seriousness about the importance of Ukraine's energy-sector reforms, the White House should elevate such reforms to the top of its diplomatic agenda, with the understanding that energy-sector reform is a prerequisite for Ukraine's economic progress and security rather than a niche issue. This move would help to avoid antagonizing Russia by shifting focus away from the ongoing military conflict that has strained U.S.-Russian relations. Most important, the United States should press the Ukrainian leadership to halt its efforts to undermine NABU, which has been effective in investigating energy-sector corruption, and to proceed with establishing an independent anticorruption court in which to prosecute NABU's cases.

Congress should extend its targeted sanctions program to include corrupt Ukrainian oligarchs based on well-defined criteria including prior, clear criminal evidence, and existing international investigations. To aid this effort, the White House should direct the Justice Department and FBI to probe known Ukrainian oligarchs and freeze their U.S. assets if warranted.

The United States should also use its influence at the IMF to press for more stringent compliance with loan conditions. Although the IMF's \$17.5 billion loan to Ukraine is conditional on reform progress, the fund's board has regularly approved waivers to disburse funds despite insufficient progress.⁵⁴ The Treasury Department, which leads U.S. dealings with the IMF, should press the fund to hold Ukraine to stated benchmarks for future disbursements.

PROVIDE TECHNICAL ASSISTANCE

The United States should also provide technical assistance as a carrot to complement the stick of increased diplomatic pressure. U.S. officials should help Ukraine refashion its institutions to increase their competence and independence.

First, the United States should send technical advisors to counsel their Ukrainian counterparts on how to best make NEURC and the SPF independent and capable of regulatory enforcement and large-scale auctions. The United States has a long tradition of agencies that exist outside federal departments and the executive office. Agencies such as the Federal Elections Commission and, more relevant, the Federal Energy Regulatory Commission (FERC) are governed by bipartisan boards and feature strict limitations on presidential authority to appoint and remove board members.⁵⁵ Officials from FERC, America's closest analogous agency to NEURC, should help Ukrainian lawmakers and regulatory authorities draft amendments and secondary legislation that would reproduce FERC's technical capacity and independent structure. FERC officials should also work with European partners and the National Association of Regulatory Utility Commissioners (NARUC), the organization representing U.S. state-level utility regulators, to help the Ukrainian government create an independent transmission system operator out of Ukrtransgaz's assets. FERC and NARUC should also continue to work with NEURC to build its capacity to implement the expansive set of rules required by the Third Energy Package.

Second, the United States, the world's largest gas producer, should send Interior Department officials to help the Ukrainian State Geological Service design a one-stop shop to simplify and ease licensing procedures. The department already connects with Ukraine through its Energy Governance and Capacity Initiative, which aims to increase the technical, financial, legal, and environmental capacity in the oil and gas sectors of partner countries. The department should work with Ukraine individually and more rigorously on its gas reforms.

Third, the Department of the Interior should expand its cooperation with Ukraine via its Unconventional Gas Technical Engagement program, which helps partner countries develop unconventional gas resources to advance energy security. The program helps countries evaluate their shale resources, assess production capabilities, and appraise the investment potential of deposits.⁵⁶ Similarly, the Department of Energy's Office of Fossil Energy should establish a bilateral program with Ukraine to exchange best practices and conduct joint research on gas production. The department already has similar partnerships with strategically important countries such as China and India.⁵⁷

Fourth, the Interior Department's Office of Natural Resources Revenue, which collects billions annually, should advise Ukrainian officials on how to create an agency to transparently collect and report royalties now that they have been lowered. In addition, the Bureau of Land Management, which manages auctions of U.S. oil and gas leases, should help the State Geological Service design competitive, transparent license auctions that are both regularly scheduled and large-scale. The United States should work with the IMF, EBRD, and international auditing firms to help the SPF develop methodologies to price state assets and determine terms for large-scale asset auctions.

Fifth, the State Department should devote more resources and personnel at the U.S. Embassy in Kiev toward mitigating corruption and promoting good governance. The Countering America's Adversaries Through Sanctions Act directs the secretary of state to establish a Foreign Service officer training program to improve good governance and combat corruption abroad.⁵⁸ The State Department should first focus this initiative on Ukraine's energy sector.

OFFER FINANCIAL SUPPORT FOR SPECIFIC REFORMS

The United States should increase aid for the massive efforts Ukraine has undertaken to untangle its economy from Russian influence. This aid should be conditional on specific corruption-reducing measures to encourage sustained progress. Ukraine will need more aid than has been pledged to continue its reforms, and its government has already demonstrated a willingness to bow to conditions for relief amid fiscal pressures.

The sanctions bill appropriates \$30 million specifically to promote Ukraine's energy security. The State Department should distribute funds for targeted reform initiatives and increase funding as needed. The IMF's assistance is conditional, but it allows Ukraine to use funds for debt restructuring and macroeconomic stabilization. The United States should pair these necessary funds with financing for specific goals in tandem.

Withholding assistance to Ukraine could result in punishing the general population for the political elite's malfeasance. To address this concern, the United States should focus its financial support on reforms that provide consumer-oriented benefits and build institutional capacity. To help ensure that reforms stick, the United States should use clawback provisions, which would obligate the Ukrainian government to return grants if it backtracks on reforms at any time.

U.S. policymakers should also work with other international financial institutions to free up more conditional funding. To supplement its IMF loans, Ukraine turned to international financial markets to raise \$3 billion in sovereign bonds for debt restructuring. Although these bonds imply international investor confidence in Ukraine's economy, those such as former Economy Minister Aivaras Abromavicius worry that such issuances will make Ukrainian governments less accountable to the IMF, which expects progress on reform.⁵⁹ The United States should work with the World Bank, EBRD, and other multilateral development banks to offer loans on favorable terms for energy efficiency and interconnection projects that increase the flexibility of the gas market. Such an effort would discourage Ukraine from pursuing support in international financial markets until reforms appear permanent and backsliding seems unlikely.

Conclusion

Ukraine has a narrow window of opportunity to advance the energy sector reforms it has begun. The success of a renewed reform push can be measured by how much domestic gas production increases, how many new gas producers enter the market, how much foreign direct investment flows into the energy sector, and how much subsidies still drag down the budget. Under the right system, Ukraine would have a diverse set of domestic and international gas producers using an independent, well-funded transmission network to serve affordable, reliable supplies at the same price to all customers under fair and transparent rules enforced by an independent regulator. Such a future would mark a clear departure from Ukraine's volatile past.

The United States should help Ukraine pursue these strategies to increase their chances of success. Increased diplomatic pressure, technical assistance, and conditional, specific financial support all would go far in advancing reform. Supporting Ukraine's energy reforms is important for the United States. It offers a unique opportunity to improve energy security and governance in an emerging ally at NATO's border and counter Russian influence without resorting to provocative military options.

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