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SPECIAL REPORT

Russia-Ukraine Crisis

Implications for the global economy and businesses

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Executive Summary

Russia's invasion of Ukraine has exposed several geo-political fault lines: a breakdown in supply chains, inaccessibility of critical raw materials, and an impending commodity crisis. Russia and Ukraine are among the largest commodity-exporting nations in the world controlling crucial natural gas, oil, metals, and agri-commodities on a global scale, and also serve as vital lifelines for the European economy. If this crisis is prolonged, it could force significant implications for Europe's energy supply, as well as present food security issues for many countries.

This paper explores the commodity dependence of European nations on Russia and Ukraine, and the effects of supply chain disruption. We also explore potential scenarios such as the impact beyond the Ukrainian border to other parts of the world, the severity of sanctions on Russia, and the likely counter-sanctions by Russia.

Through this paper, we aim to answer the following questions:

I. How will supply chains be disrupted in select sectors across specific countries?

II. How severe are sanctions and counter-sanctions? What are the impacts of Russian counter-sactions on other nations?

III. How will pricing and availability change for commodities such as natural gas, crude oil, metal, and agri-commodities?

Key Takeaways

- The Russia-Ukraine conflict has the potential to damage European economic recovery prospects. If escalation occurs, this could bring the North Atlantic Treaty Organization (NATO) into a war-like situation with Russia. The economic repercussions of such a conflict, which might be more prolonged than expected, could have devastating effects on the nascent recovery of the pandemic-ravaged global economy.
- If the conflict continues, the availability of critical raw materials such as natural gas, crude oil, metals, and agri-commodities would be jeopardized and transportation costs would increase. In addition, businesses worldwide may experience further supply chain bottlenecks and increased pricing pressures.
- While the focus of newly announced sanctions by the Office of Foreign Assets Control (OFAC) is on the seven major Russian financial institutions and 13 Russian firms at the time of writing, the total corporate family members of these businesses include 16,748 entities spread across 21 countries, according to Dun & Bradstreet data. This underscores the need for beneficial ownership data and the importance of having access to corporate family tree data in uncovering hidden compliance risks.
- This is yet another reminder of the interconnectedness that comes with globalization and our reliance of each other as contributors to the global supply chain. There are 14,745 Tier 1 and 7.6 million Tier 2 supplier relationships with Russian entities globally. As a result, we are seeing the ripple effects of U.S., UK, and EU sanctions on Russian companies – further crippling an already weakened global supply chain.
- A likely disruption of trade routes, rising freight costs, inaccessibility of critical raw materials, and wide disruption to businesses threaten to derail global economies while adding to inflationary pressures. In addition, potential rate hikes may further exacerbate rising manufacturing and production costs – leading to higher price tags for end-user goods and services.

These impacts could lead to a potential increase in bankruptcies and delinquencies among businesses around the world.

Supply Chain Disruptions

The invasion of Ukraine and subsequent sanctions on Russia may result in shortages of critical supplies, material cost increases, more erratic demand, and logistical and capacity bottlenecks.

Impacted Industries

According to Dun & Bradstreet data, Ukraine has more than 1.5 million active businesses. The top five major sectors that account for 80% of all active businesses in Ukraine include services, wholesale trade, construction, manufacturing, and agriculture (see chart 1). Wholesale trade, manufacturing, and agricultural sectors together account for more than one-third of all enterprises in Ukraine. These businesses conduct commerce with other enterprises throughout the world, and as a result, any significant disruption to their operations could have ramifications for the global economy.

Dun & Bradstreet data indicates Russia has more than 3.5 million active businesses. The top five major sectors account for nearly 80% of all active businesses in Russia, including services, wholesale trade, finance, insurance and real estate, construction, and retail trade (see chart 1). A majority of these businesses could likely be disrupted should other countries decide to stop conducting business with Russian entities, or face cybersecurity threats. The removal of Russian financial institutions from the Society for Worldwide Interbank Financial Telecommunication (SWIFT) may also likely disrupt the cashflow of these firms.

Chart 1 - Distribution of businesses in Ukraine and Russia

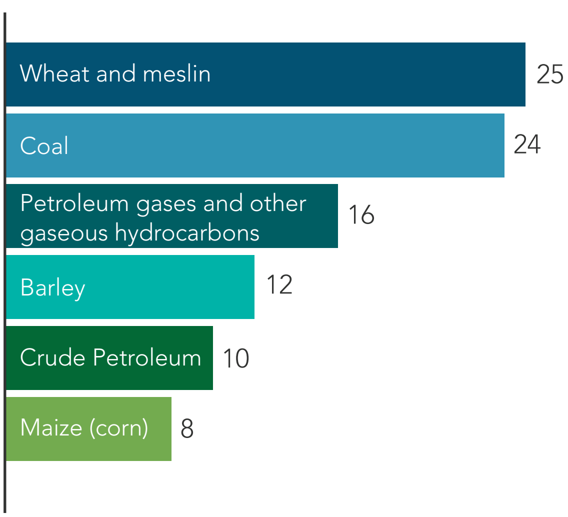
Source: Dun & Bradstreet

Import Dependency

While Russia and Ukraine account for only 1.9% and 0.3% of the global merchandise export value respectively, these countries are the world's largest exporters of particular commodities. For instance, Russia and Ukraine together account for 59% of global sunflower oil exports (HS code 1512), 36% of global iron or non-alloy steel exports (HS code 7207), and 26% of global wheat exports (HS 1001).

Data from UN Comtrade shows that several countries have a high dependency on Russian and Ukrainian exports. For the purpose of this report, a country is said to have high dependency when it imports more than 50% of its total imports of a particular commodity from Russia and Ukraine. By that definition, 25 countries have a high dependency for wheat and meslin, 24 countries for coal, 16 for petroleum gases, and 10 for crude petroleum (see chart 2). Many EU nations and Eastern European nations fall into these categories.

Chart 2 - No. of countries that have a high dependency on Russian and Ukrainian exports of select commodities



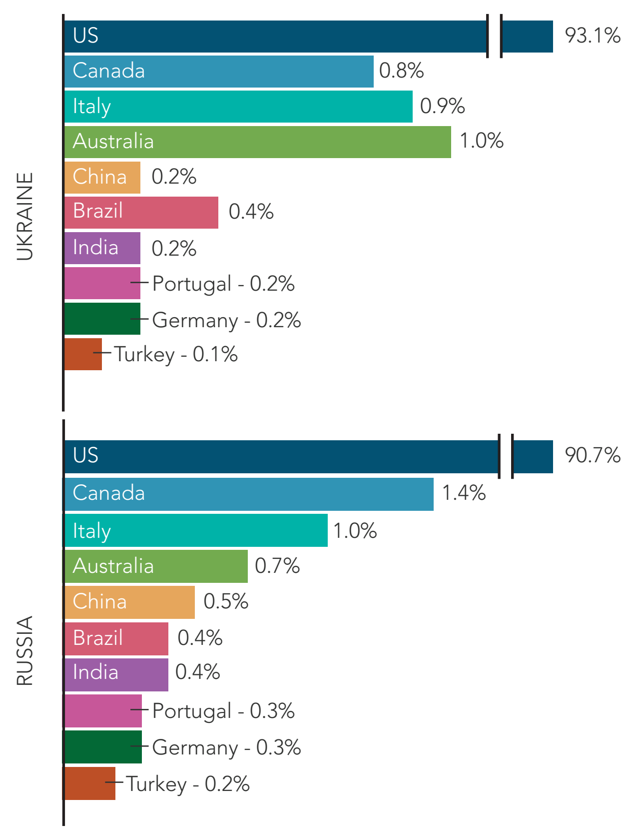
UN Comtrade, Dun & Bradstreet Research

International Connections: Supplier Routes

As referenced above, this is yet another reminder of the interconnectedness that comes with globalization and our reliance of each other as contributors to the global supply chain. There are 14,745 Tier 1 and 7.6 million Tier 2 supplier relationships with Russian entities globally. As a result, we are seeing the ripple effects of U.S., UK, and EU sanctions on Russian companies – further crippling an already weakened global supply chain. According to Dun & Bradstreet data, at least 374,000 businesses worldwide rely on Russian suppliers. Over 90% of these businesses are based in the U.S. (see chart 3). Similarly, at least 241,000 businesses across the world rely on Ukrainian suppliers. Over 93% of these businesses are based in the U.S. (see chart 3). Other countries with impacted supply chains include Canada, Italy, Australia, China, and Brazil.

There are at least 390 businesses globally with critical suppliers in Russia. Critical suppliers, for the purpose of this report, are defined as suppliers that provide goods and services of at least USD100,000 and account for not less than 5% of all invoices. The top five countries that have critical suppliers in Russia are the U.S., China, India, Japan, and the UAE. There are at least 210 businesses globally with critical suppliers in Ukraine. The top five countries with the most exposure are the U.S., Mexico, China, Brazil, and Canada.

Chart 3 - Distribution by country of businesses that have suppliers in Ukraine and Russia (Tier 1 & Tier 2)



Source: Dun & Bradstreet

Businesses located in the countries above were already experiencing operational difficulties due to Covid-19 pandemic restrictions affecting both demand and supply, as well as high commodity costs for crude oil, natural gas, and minerals. The Russia-Ukraine conflict threatens to further aggravate supply concerns for these countries. The following is a non-exhaustive list of alternative supplier countries for the major products exported by Ukraine and Russia.

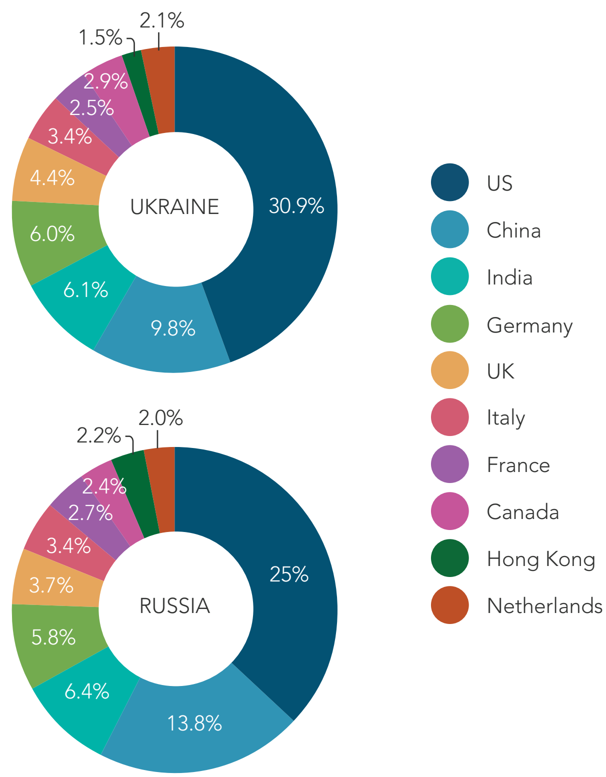
According to Dun & Bradstreet data, Ukrainian businesses source goods and services from at least 55,000 companies located in the other countries. About 57% of these businesses are located in the U.S., China, India, Germany, and the UK (see chart 4). Similarly, Russian businesses source goods and services from at least 92,000 companies located in the other countries. About 55% of these businesses are located in the U.S., China, India, Germany, and the UK (see chart 4).

Potential Alternate Suppliers for Major Products Exported by Ukraine and Russia

HS Code	Product	Potential Alternate Supplier Countries
7403	Copper	Chile, Dem. Rep. of the Congo, Japan
1005	Corn	U.S., Argentina, Brazil
2709	Crude Petroleum oil	Saudi Arabia, Iraq, U.S.
7108	Gold	Switzerland, Australia, UK
7207	Iron and steel	Brazil, India, Vietnam
2601	Iron ore	Australia, Brazil, South Africa
8544	Insulated wire, and other electric conductors	China, Mexico, U.S.
7110	Platinum	UK, South Africa, U.S.
1512	Sunflower seed, safflower or cotton-seed oil	Turkey, Netherlands, Hungary
8411	Turbo-jets, turbo-propellers	UK, Singapore, France
1001	Wheat	U.S., Canada, France

Source: UN Comtrade, Dun & Bradstreet

Chart 4 - Distribution by country of businesses that have customers in Ukraine and Russia



Source: Dun & Bradstreet

Call to Action

I. Businesses should onboard an appropriate balance of risk by reassessing their credit policy to recalibrate their portfolio risk profile for new and existing clients.

II. Have an end-to-end mapping of your supply chain by monitoring your direct suppliers as well as Tier 2 and Tier 3 suppliers. The key question is: “How exposed are my suppliers to trade in sectors where Russia and Ukraine are key players?”

III. Stress test your ability to cope with different scenarios. Are there alternatives to existing suppliers? Perhaps in different markets? Can you stockpile? What is the maximum increase in prices that your supply chain would be able to sustain, and for how long?

Sanctions on Russia

Past Sanctions

The impact of financial sanctions since 2014 have been modest on the Russian economy, primarily because more than half of those sanctions targeted individuals rather than entities. However, among sanctioned firms, the impact on their revenues, growth potential, and asset valuations were significant. According to the January 18, 2022 U.S. Government Congressional Research Service report, *U.S. Sanctions on Russia*, sanctioned firms lost on average about 25% of their operating revenues, equating to over 50% of their asset values, and about 33% of their employees relative to their non-sanctioned peers over a period from 2012-2016.

Impact of new financial sanctions on Russia

The financial sanctions announced in the week running up to February 28, 2022 are a significant step-up over previous sanctions, both in terms of the type of sanctions and the entities targeted, which encompass roughly 70-80% of the Russian banking system. These sanctions include asset freezing, blocking access to new funding, restrictions on certain types of transactions, and exclusion of Russian banks from the SWIFT payments system. Future financial sanction options include more extensive use of full block sanctions against systemically important entities. These are likely to be extremely disruptive for the conduct of daily business as:

I. Russian banks conduct USD46 billion of daily foreign exchange transactions, 80% of which is in USD.

II. Nearly 84% of Russian export earnings are in USD and EUR. This will have to be shifted to local currencies or routed through alternate means, such as the System for Transfer of Financial Messages (SPFS), which handles about a fifth of domestic transactions, through the alternate payments systems of large trading partners such as China, or an increased use of central bank digital currencies.

Financial sanctions by the U.S. have been ramped up in the week running up to February 28, 2022

Timeline	Target	Sanction Type	Immediate Impact	Remarks
Phase 1 (Feb. 22)	Banks	Full block on state owned institutions: VEB and PSB banks	Medium	1. Total asset of affected banks: USD80 billion 2. Freeze on all assets touching U.S. financial system
	Sovereign	Expanded sovereign debt prohibitions to include secondary market participation on new debt issuances	Low	1. Higher external financing cost for the sovereign and Russian enterprises
Phase 2 (Feb. 24)	Banks	Correspondent and payable through account transitions on Sberbank and full block on VTB, Bank Otkritie, Sovcombank, OJSC and Novikombank	High	1. Total asset of affected banks: USD1 trillion 2. Restricted access to dollars for Russia's largest bank 3. Freeze on all assets touching U.S. financial system for Russia's second largest bank and three others
	Companies	New debt and equity restrictions on 13 large Russian enterprises and their subsidiaries: Sberbank, AlfaBank, Credit Bank of Moscow, Gazprombank, Russian Agricultural Bank, Gazprom, Gazprom Neft, Transneft, Rostelecom, RusHydro, Alrosa, Sovcomflot, and Russian Railways	Medium	1. Total assets of affected companies: USD1.4 trillion 2. Targeted entities include Russia's largest companies by revenue 3. Companies lose access to long-term financing but can continue to transact with credit for up to 14 days

Source: US White House statement release and Dun & Bradstreet

At the time of writing, European and U.S. administrations have imposed additional sanctions on President Putin and given, in principle, approval to target Russia's central bank, as well as the expulsion of a number of Russian financial institutions from SWIFT. While sanctions on Russian leadership are largely symbolic, the sanctioning of the country's central bank and some of its largest financial institutions could be a devastating blow, with serious implications for the economy and businesses. Details of the entities targeted in the SWIFT-related sanctions are awaited.

While OFAC has imposed sanctions on seven major Russian financial institutions and 13 Russian firms at the time of writing, the total corporate family members of these companies include 16,748 entities spread across 21 countries, according to Dun & Bradstreet. The OFAC 50% Rule imposes sanctions on businesses with a combined ownership by sanctioned parties of 50% or more. In addition to causing financial disruptions to the ultimate parent companies in Russia, sanctions would also disrupt entities in other countries who have business relationships with the sanctioned companies.

Impact of new trade sanctions on Russia

Along with financial sanctions imposed on Russia, there were several trade sanctions imposed on February 28, 2022 which could have adverse impacts on firms operating in Russia.

These sanctions include:

I. The UK has banned Russia's Aeroflot airline and suspended export licenses for dual-use items which can be used for military purposes. It has also banned exports of high-tech items and oil-refinery equipment.

II. Germany has halted the process of certifying the Nord Stream 2 gas pipeline from Russia to Germany.

III. The EU has targeted its trade sanctions against Russian defense firms, and the energy sector with an export ban on material used for oil refineries. It has also banned the sale of aircraft and equipment to Russian airlines.

IV. The EU intends to limit Russia's access to high-tech products and software to cease development of Russian military capabilities.

V. Japan is halting exports of goods such as semiconductors to Russia.

VI. The export control measures announced by the Biden Administration will cut off more than half of Russia's high-tech importation of goods and restrict Russia's access to vital technological inputs.

Impact of these trade sanctions:

I. A ban from SWIFT will delay payments that Russia receives for exports of oil and gas.

II. Banning exports of high-tech goods to Russia – such as semiconductor microchips – could affect Russia's defense, aerospace sectors and automobile industries.

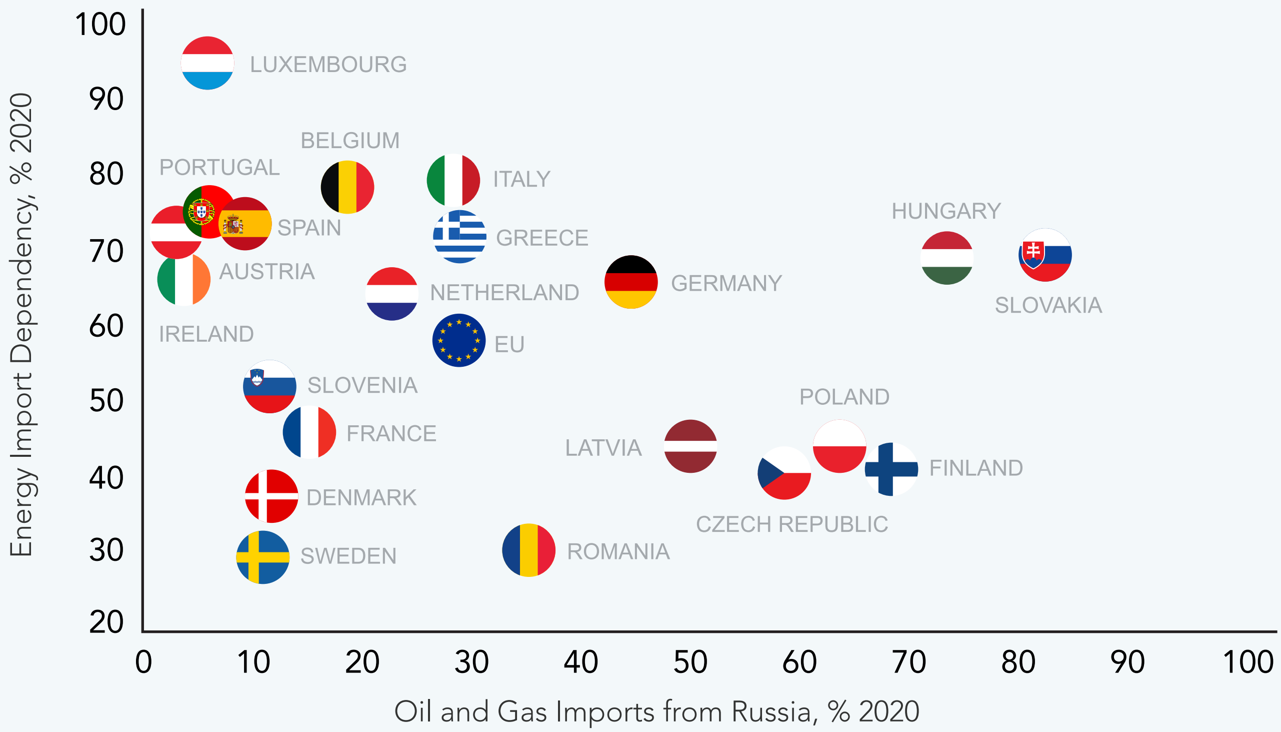
Possible reaction/sanctions from Russia

If sanctions against Russia are prolonged and hurt the Russian economy significantly, Russia might react with counter-sanctions including restrictions on crude oil and natural gas supplies, and coal and rare metals to Europe. As Russia has near-monopolized energy supplies, the impact would be devastating on EU nations. Commodities like natural gas, due to geographical proximity, existing infrastructure and transportation ease, are difficult to replace in the short term. Similarly, other industrial and rare metals are also dependent on Russian supply and are critical for the aerospace and the automobile industries in Western Europe. There is also high dependence on agricultural commodities from both Russia and Ukraine such as wheat, barley, and corn. While these supplies could be procured from other countries, they will carry price implications.

Can Europe survive without Russian energy in the short- and long-term?

The brief answer is *not in the short-to-medium term*. As the crisis worsens, Europe's energy security will represent a key risk to markets. The threat or reality of supply disruption to hydrocarbon flows will lead to an increase in prices. Global energy markets are already tight, making near- to medium-term substitution extremely difficult. That said, energy continued flowing from Russia to Europe even at the height of the Cold War. Germany has taken action against the Nord Stream 2 gas pipeline, impacting 30 billion metric cubes of gas expected to enter the continent in 2022. In the event of further disruptions in supply from Russia, natural gas would need to be sourced from the U.S., Qatar, Saudi Arabia, or the UAE. However, most of these countries do not have significant capacity to increase production on an immediate basis, and most of their supply is already earmarked for trade or domestic consumption. According to Gas Infrastructure Europe (GIE) Aggregate Gas Storage Inventory (AGSI) data, the European gas storage levels are critically low at around 33% of capacity as of February 25, 2022, exacerbating the situation. Geopolitical tensions and supply shortages will underpin high gas prices in the short term.

Chart 5 - Energy Import Dependency



Source: Eurostat, Dun & Bradstreet

Call to Action

Understanding complex legal structures often can represent a significant challenge for compliance professionals.

Making technology investments today allows companies to better manage risk, giving them greater transparency into their operations, while also serving up the data and insights needed to make informed decisions, particularly during unexpected events.

Shocks to Select Commodity Prices and Impact on Prices and Inflation

Russia and Ukraine are major exporters to Europe and the rest of the world for energy (crude oil, natural gas, coal, and chemicals), industrial metals (ferrous, non-ferrous, and rare earth metals), and agriculture commodities. Among these, crude oil, natural gas, and other minerals, industrial metals and industrial chemicals are critical supplies for EU nations. Any inaccessibility would add to inflationary pressures, in addition to causing significant disruptions to businesses and consumption globally, and particularly in Europe as alternate supplies could be hard to find.

Commodities - Direct Channel for Inflation and Rising Prices

1. Energy

Natural Gas: Many European countries are heavily dependent on Russian energy, particularly natural gas. According to the Directorate-General for Energy for the EU, approximately 41% of Europe's natural gas supplies come from Russia. Other sources of gas are Norway 24% and Algeria 11%, with the remainder coming from domestic production. Natural gas represents around a quarter of the EU's overall energy consumption: 26% of gas is used in power generation, 23% in industry, with the remainder used for residential heating and services. While a complete suspension of Russian gas flow is unlikely, even minor disruptions will have a significant impact on Europe's energy security, with resulting inflationary impacts.

An alternative source of natural gas would be liquified natural gas (LNG) import, although this may incur infrastructure as well as supply-related issues. Current LNG suppliers are the U.S. 28%, Qatar 20%, Russia 20%, Nigeria 14%, and Algeria 11%. The EU's overall LNG import capacity, at around 157 billion cubic metres per year, is only sufficient to meet about 40% of total current gas demand, leaving the remaining 60% still to be satisfied by natural gas. The tighter demand-supply mix would cause rising LNG prices in the international market. To compound matters, global gas reserves are low due to the coronavirus pandemic, and energy prices have risen sharply, impacting both consumers and industry.

Crude Oil: As per the Organization of Petroleum Exporting Countries (OPEC) data, the current global crude oil demand for 2022 has been projected at around 100 million barrels per day (bpd). International Energy Agency (IEA) estimates Russian crude oil production of around 11 million bpd in January 2022, out of which around 4.5 million bpd is going to Organisation for Economic Co-Operation and Development (OECD) Europe, meeting around 34% of Europe's crude oil imports. Any disruption to this vital crude oil source would result in oil price shocks to the global crude oil market. IEA also estimates that roughly 750,000 barrels per day of crude oil is delivered to Europe via the Druzhba pipeline system, transiting through Ukraine to supply Hungary, Slovakia, and the Czech Republic. Russia is also a significant supplier of crude to Belarus, Romania, and Bulgaria, and of products to most of the Former Soviet Union countries, including Ukraine. Given the disruption concerns and demand-supply gap in the global oil market, we believe that crude oil prices will vary in the range of USD100-110 per barrel in the very near term, gradually subsiding as the situation becomes clearer.

2. Industrial Metals

Russia and Ukraine lead global production of metals such as aluminum, nickel, copper, and iron ore. Non-availability of Russian as well as Ukrainian supplies could cause high prices along with volatility. For rare metals like neon, palladium, and platinum, Russia has been the primary supplier to Europe. Ukraine is also a vital source of rare metals (iron ore, manganese, titanium, gallium, kaolin, zirconium, and germanium) to Europe and the rest of the world. As other sources of these rare metals are geographically distant such as China, Japan, and South America, it has been a primary source for European industries.

Sanctions on Russia have already increased the price of these metals. Palladium is trading at USD2,700 per ounce, up over 80% in the last two months. The prices of aluminum, nickel, and copper are all trading at their all-time high levels. Given that nickel is a critical raw material in the manufacturing of electric car batteries, and copper is widely used in electronics production and residential building, businesses engaged in these sectors could face increasing costs for these metals and potential supply chain disruptions. The automobile and aerospace industries of the U.S., EU, and UK depend on titanium from Russia, with limited alternatives available. About 90% of neon, used for chip lithography, originates from Russia. Alternative sources would be difficult to come by.

3. Agri-commodities

Russia and Ukraine are key suppliers of agricultural goods to regions including Europe, Asia and the Middle East, and the conflict could have devastating effects on global supplies. Together, these two nations account for more than 25% of the world's trade in wheat, about 20% of corn sales, and 80% of sunflower oil exports. Wheat prices have reached the highest level in the last 13 years. Additional price shocks would worsen rising food costs, particularly if key agricultural areas in Ukraine fall under the control of Russian troops.

Disruption of Transportation System - Indirect Channel for Inflation and Prices Rise

Gas is essential to transportation, therefore energy disruptions will cause industry-wide consequences. Roughly 44% of electricity generation in Europe is based on natural gas and coal with about 41% of natural gas imports from Russia alone. With additional disruption of Russian gas, Europe is staring at significant disruptions to its electricity grids. Replacements are hard to come by as global LNG supplies are stretched, and would only be available at significantly higher prices. Coupled with a sharp rise in crude oil prices, this would have repercussions on public transport systems in major European cities.

Call to Action

I. Develop a risk-based assessment process to identify specific risks that could impact the productivity of your supply chain. Create a plan that supports a flexible and agile network, regardless of circumstances and unexpected events.

II. Continuously monitor your supply chain. Make sure that you are monitoring the risks associated with both your Tier 1 and Tier 2 suppliers to ensure your company has a complete view of your supply chain.

III. Identify alternative suppliers for urgently needed goods in higher-risk regions. Determine how long it would take to onboard them and how quickly they could deliver to your location. Will it be faster than waiting for shipments from your original supplier, depending on the type of disruptive event that might occur?

IV. Invest in data and technology for longer-term supply chain agility.

How can Dun & Bradstreet help?

Business agility can be the biggest asset for commercial viability, especially during unprecedented times. With solutions such as D&B Risk Analytics and D&B Supplier Risk Manager™, businesses can avoid gaps in supplier risk management and reduce the likelihood of operational disruption as these solutions offer businesses the tools to screen third-party suppliers, monitor screened suppliers for risk changes and provide alerts when potential risk arises. Businesses can also gain visibility into their suppliers' corporate linkage and ultimate beneficial owners and locate best alternative suppliers.

A global view enables mitigation of emerging cross-border risks, and the ability to grasp growth opportunities wherever they are in a timely way. Dun & Bradstreet's Country Insight Reports provide forecasts and business recommendations for 132 economies, allowing businesses to monitor and respond to economic, commercial and political risks in the markets in which they operate. In light of recent supply chain disruptions, purchasing managers may find the supply environment outlook section in the Country Insights Reports particularly helpful.

Please contact your Dun & Bradstreet account manager today to learn how to manage your risk profile properly and plan for sustainable success.

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