



The Polycrisis and the Energy Trilemma: The geopolitical risk landscape in 2023

In a world perceived as increasingly:

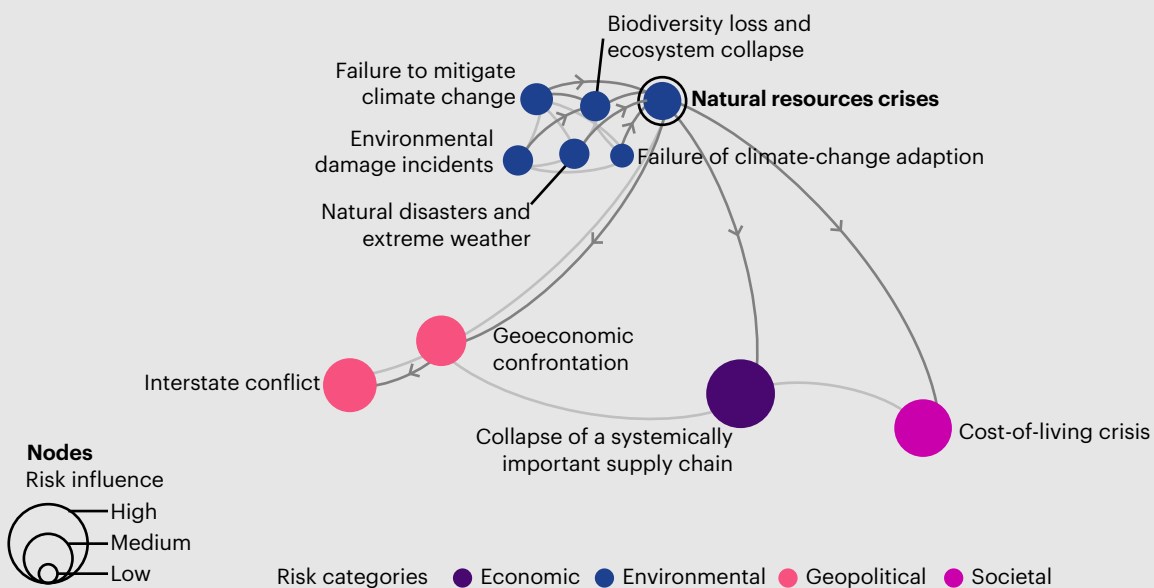
- Volatile;
- Uncertain;
- Complex; and
- Ambiguous,

simple concepts (such as VUCA) can be useful to make sense of the complexity.

“Polycrisis” is one such example, first appearing in the 1990s to mean “interwoven and overlapping crises” facing humanity. Now it has been popularised by the 2023 World Economic Forum Global risk report¹ (see Figure 1 below) to refer to the interrelated environmental, geopolitical and socioeconomic risks to the supply of and demand for natural resources by 2030.

The power market sector finds itself at the confluence of multiple crises: a cluster of environmental challenges, a cost-of-living crisis, supply chain disruption post-COVID-19, and geopolitical tensions.

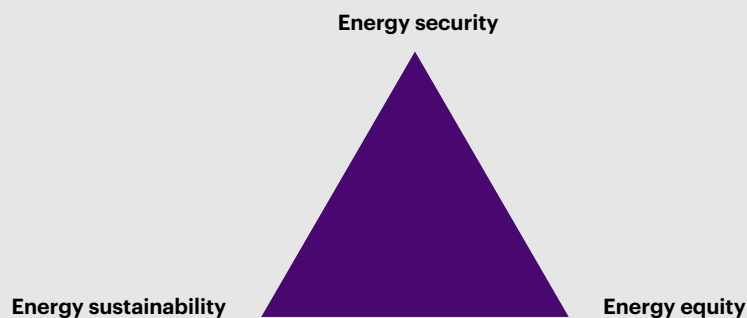
Figure 1: The natural resource polycrisis



Source: Natural Resources Polycrisis — 2023 WEF Global Risk report (page 58)

¹ The Global Risks Report 2023 18th Edition https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf

Figure 2: **The Energy Trilemma**



Energy Security: the capacity to meet current and future energy demand reliably, withstand and bounce back swiftly from system shocks with minimal disruption to supplies. The dimension covers the effectiveness of management of domestic and external energy sources, as well as the reliability and resilience of energy infrastructure.

Energy Equity: the ability to provide universal access to reliable, affordable, and abundant energy for domestic and commercial use. The dimension captures basic access to electricity and clean cooking fuels and technologies, access to prosperity-enabling levels of energy consumption, and affordability of electricity, gas, and fuel.

Energy Sustainability: the transition of energy system towards mitigating and avoiding potential environmental harm and climate change impacts. The dimension focuses on productivity and efficiency of generation, transmission and distribution, decarbonisation, and air quality.

Source: WTW

Yet when it comes to risk management and strategic decision making, perhaps a more helpful concept is that of the “energy trilemma”, which neatly and timelessly summarises the tensions that this sector is subject to when trying to find a balance between security, affordability, and sustainability.

The last 18 months have shown how this balance can be impacted by geopolitical events, with different countries making different decisions to resolve their energy trilemma.

A reminder that energy and geopolitics are intricately linked was the well-reported presence of Dr Fatih Birol, the director of the International Energy Agency at the last G7 summit in Hiroshima in May 2023. He outlined recommendations for a “clean” energy world, to avoid the same geopolitically driven energy security risks that have become part of the global energy landscape since the 1970s around oil and gas.

Beyond the Russian-Ukraine conflict

Recap of the conflict’s impact on the power sector

While today’s energy crisis shares some parallels with the oil shocks of the 1970s, there are important differences, which make it the first truly global energy crisis: it affects all energy sources (rather than mostly oil) and economies are much more interdependent. It also is likely to last longer, no less due to Russia’s continued

conflict with Ukraine. Russia was until then the primary energy exporter for oil and gas, and a major exporter for coal and uranium.

The impacts of the conflict have been wide-ranging:

- **Trade flows:** Despite sanctions, Russia’s oil exports have held on, with shipments re-routed to Asia in particular. There has been much talk about the “weaponization of energy” by Russia; but if this is the case, the weapon has been pragmatic and ambiguous. The flow of gas and oil towards Europe has been more durable than often assumed. Between February 2022 and February 2023, the EU imports of Russian oil fell by 90%² (but not immediately, and not down to 100%). However, while Russia may have found new customers for its oil and gas, it is facing longer term issues regarding the maintenance of its power operations and infrastructure. As it continues striking Ukraine’s power infrastructure, its own is creaking, due to the reliance of imported equipment and technology.
- **Asset seizures:** foreign-owned utility assets were seized by Russia, in retaliation for asset freezes by European countries (e.g. Germany’s Uniper SE and Finland’s Fortum Oyj³)
- **Investment flows:** after plummeting by 70% in 2020 due to the COVID-19 pandemic, Foreign Direct Investment (FDI) flows to Russia had rebounded by 267% in 2021, reaching

² https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_OILM_custom_6551104/bookmark/line?lang=en&bookmarkId=5c2a870b-6a76-40d8-836a-d8037b6001c2

³ <https://news.yahoo.com/russia-seizes-fortum-uniper-plants-050049445.html>



US\$38.2 billion⁴. Unsurprisingly, an unprecedented range of sanctions has triggered a flight of foreign capital from Russia; according to OECD data, in the first half of 2022 negative FDI flows to Russia reached US\$24.3 billion.

The impact on energy availability and cost has been widely felt. While cost of living crisis protests have been more intense in relatively wealthier countries, developing countries have been particularly vulnerable to the higher costs of energy, given their weaker trade balance.

Higher energy costs have challenged energy companies' social licence to operate. The comments of a European utility company executive reflect this in the 2023 WTW Political risk survey: "Our end customers being citizens means that we operate in a political environment. This means pricing is very sensitive."⁵ With high inflation, the degree of risk from this issue, and the level of government intervention in consumer electricity bills, has become really striking. The consequences for energy companies can range from grassroots movements such as Don't Pay UK encouraging non-payment of energy bills, to more violent protests, such as the 2019 protests in Santiago, Chile, where the offices of an energy company were set on fire⁶.

Has the conflict hindered or accelerated the energy transition?

What does this latest geopolitical crisis mean for the energy trilemma? According to DNV's *Trilemma and Transition*⁷ report, based on a survey of over 1,300 senior energy professionals and in-depth interviews, energy security currently trumps sustainability and affordability. The most interesting insight is that this hides large differences between sectors. Energy security dominates for oil and gas and electrical power, while renewables respondents make clean energy the top priority, and industrial energy consumers prioritize affordability.

Amid the energy crisis following Russia's invasion of Ukraine, Germany revived its use of coal for electricity generation, increasing its coal imports by 8% (including from Russia). It also fast-tracked the construction of a Liquid Natural Gas terminal on the North Sea, in a bid to reduce its dependence on pipelines from Russia.

Does this mean the conflict has hindered the energy transition? The IEA chief is optimistic that in fact the Russia-Ukraine conflict may have accelerated it⁸. Diversification away from fossil fuels is now driven not only by sustainability objectives but also by security objectives.

In 2010, the EU reached a milestone in the energy transition, with more than 50% of its energy coming from renewables (hydro, wind, solar, bioenergy and other renewables) and nuclear⁹. However, investment has been declining, and is dwarfed by the investment in China¹⁰, where innovation has flown. The European approach to "regulate first, innovate later" has resulted in lost ground, and the latest geopolitical crisis may help to boost investment.

However, is there a risk of jumping out of the frying pan into the fire? Are we transitioning from an overreliance on oil and gas, and on Russia, to a greater reliance on renewables and on China?

Looking ahead: Out of the frying pan into the fire?

Looking ahead, strategic choices for power companies will be framed and constrained by the following geopolitical considerations:

- natural resources essential for energy production
- friend/reshoring operations and supply chains
- the growing rift between rich and poor countries (as seen in COP27)

⁴ https://unctad.org/system/files/official-document/wir2022_en.pdf

⁵ <https://www.wtwco.com/en-gb/insights/2023/04/2023-political-risk-survey-report>

⁶ <https://www.ft.com/content/d05a54ac-f24b-11e9-a79c-bc9acae3b654>

⁷ <https://www.dnv.com/power-renewables/energy-industry-insights/trilemma-transition.html>

⁸ <https://edition.cnn.com/2022/10/27/energy/iea-global-outlook-report-2022-climate/index.html#:~:text=In%20its%20annual%20World%20Energy%20Outlook%20report%2C%20published,the%20decade%20%E2%80%94%20up%2050%25%20from%20today%E2%80%99s%20spending>

⁹ <https://ember-climate.org/data/data-tools/data-explorer/>

¹⁰ <https://www.visualcapitalist.com/ranked-the-top-10-countries-by-energy-transition-investment/>



In a multi-energy world, the resulting geopolitics are expected to be different. And in the meantime, the geopolitics of the transition phase could also be complicated.

Let's look at the optimistic view first

The reliance of a fossil-fuelled world on a relatively small number of producers, on pipelines and trade flows, may be giving way to a more decentralised energy system powered by renewables. The shift of focus from external to internal energy supply could support more energy self-sufficiency and less conflict, as it is more difficult to control a decentralized power network, cut the supply or manipulate the price of renewable energy than fossil fuels; this could lead to geopolitical power to be more evenly distributed than before. In a system dominated by renewables, distribution and infrastructure management are more important and technical and regulatory aspects gain weight.

There are also glimmers of hope such as the Just Energy Transition Partnerships (JETPs), which aim to bridge the gap between developed and developing nations in moving towards clean energy, while addressing the social consequences of that transition. South Africa, Indonesia, India, Vietnam, and Senegal will be the first test cases.

Against this hopeful outlook, the arguments in favour of persisting geopolitical tensions stack up:

- The abundance and decentralized nature of renewable energies is tempered by the reliance on raw materials (such as rare earth elements) that are critical for renewable energy generation, distribution, or storage, which are still controlled by a few countries, which makes supply chains vulnerable to trade bans. Indonesia has 22% of the world's nickel reserves, and its ban on nickel ore exports since 2020 has disrupted the supply chains of products such as electric vehicles and rocket engines.

- The mining of critical materials in so far unexplored areas is another reservoir of tensions. The July 2023 meeting in Jamaica of the International Seabed Authority (ISA), an intergovernmental body of 168 member states tasked with regulating deep-sea mining, shows that further geopolitical tensions could arise from interest in the deep ocean seabed. Initial estimates hint that seabed reserves could dwarf those on land: in parts of the Pacific and Indian oceans, manganese nodules can be found, exceptionally rich in 37 metals. Yet deep sea mining is bound to raise environmental concerns in areas of rich and unexplored biodiversity, and the US did not join the Convention on the Law of the Sea because of the controversial provision that some of the profits from commercial mining should be shared with the international community.
- Technology critical to the energy transition is also concentrated in fewer hands. China is the leading global supplier of clean energy technologies today and a net exporter for many of them. It holds at least 60% of the world's manufacturing capacity for most mass-manufactured technologies (e.g. solar PV, wind systems and batteries), and 40% of electrolyser manufacturing.
- The nuclear market renaissance presents its own challenges, with the uranium production predominantly in authoritarian states and zones of influence. Meanwhile, China leads the world in building nuclear power plants (24 units are currently under construction). China is also supporting nuclear capacity in partner countries in its Belt and Road Initiative, for example helping Argentina build the Atucha III, a 1200-megawatt reactor, the country's fourth nuclear power plant.
- Interdependencies between states resulting from electricity interconnectors will remain, even though the International Renewable Energy Agency notes that electricity cut-offs and the use of hegemonic power to cut off transport bottlenecks will be greatly reduced due to increased rerouting possibilities, decentralized power generation and the absence of global electricity connections.

Overall, there is much uncertainty on the future energy geopolitics, both during the transition phase and in its new equilibrium; but it seems naïve to think that there will be fewer tensions.

Whether research can meaningfully reduce our over-reliance on some of those critical materials remains to be seen, but this is an area to watch carefully, as illustrated by these two examples:

- Researchers at Cambridge University¹¹ recently discovered a new method to manufacture high-performance magnets used in wind turbines and electric cars without the need for rare earth elements, almost exclusively sourced from China.
- Geoscientists¹² are looking at whether dormant volcanos can help: magmatic brines, found worldwide beneath dormant volcanoes may provide a more sustainable solution to the global shortage of key metals.

The permacrisis: tips for risk managers

Risk managers may have to get used to a state of permacrisis (the Collins Dictionary's word of the year for 2022), in recognition that most of the crises they face are situations that can only be managed, not resolved. This doesn't mean that they are helpless, but they need to overcome two seemingly unsurmountable challenges:

Myth #1 — you can't manage what you can't measure

With the explosion of open-source data on geopolitical risks, the pace of change and the wide availability of data providers, there is a danger of not being able to distinguish useful signals from the noise. No one has a crystal ball, but the following activities are a good investment:

- **Horizon scanning:** like all man-made risks, geopolitical risk is notoriously difficult to quantify and predict, but regular, structured monitoring of countries relevant to individual company activity can provide essential warning before the situation deteriorates. The twice yearly WTW political risk index¹³ can be a useful guide to decrypt our VUCA world by providing a "risk temperature" for 61 higher risk countries.
- **Scenarios:** considering different versions of the future, and exploring the implications for individual power companies, is a great way to increase the resilience and preparedness of the company's business. There are many energy-specific scenarios around, ready to use; the 2023 Shell scenarios¹⁴ contrast a world driven by a security mindset (Archipelagos) with a world

where climate security takes precedence (Sky 2050). The slightly older scenarios developed by Lloyd's and Cambridge University¹⁵ look at three possible futures: green globalisation, climate anarchy, and green cold war.

Myth #2 — you can't insure against geopolitical risks

Indeed, companies cannot insure against all risks driven by geopolitical tensions, and the corresponding protection gap is difficult to quantify. Yet there is a lot that can be insured, with a wide range of insurance products available, from crisis management, terrorism and sabotage to political violence and war, forced abandonment, confiscation, and currency inconvertibility. And looking at the impact of geopolitical risk too narrowly would miss out other potential risk transfer options, such as reputational risk insurance.

This is a clear case of insurance being only one of the risk mitigation strategies deployed — for example, investment in preparedness¹⁶ through supply chain management, together with a review of business continuity plans and communication strategies will increase the resilience in the face of most crises, geopolitically-driven or not.

The ever-present ESG concerns are often interpreted through the prism of response to climate change, but the successive geopolitical crises have shown the importance of the concurrent pressures from regulator, governments, consumers, finance and media on the S and the G.

Traditionally, geopolitics have been driven by the "great powers" — a set of sovereign states recognized as having the ability and expertise to exert their influence on a global scale. Given its strategic importance in the energy transition, the power sector may also be joining the fray. Whether it turns out to be a pawn or an active player, the advice given to Spiderman ("with great power comes great responsibility") feels very appropriate to our times.



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¹¹ <https://www.cam.ac.uk/research/news/new-approach-to-cosmic-magnet-manufacturing-could-reduce-reliance-on-rare-earths-in-low-carbon>

¹² <https://geoscientist.online/sections/features/mining-the-brine/>

¹³ <https://www.wtwco.com/en-gb/insights/2023/07/political-risk-index-summer-23>

¹⁴ <https://www.shell.com/energy-and-innovation/the-energy-future/scenarios/the-energy-security-scenarios>

¹⁵ <https://www.lloyds.com/news-and-insights/risk-reports/library/shifting-powers-climate-cooperation-chaos-or-competition>

¹⁶ <https://www.wtwco.com/en-gb/insights/2022/09/how-can-i-prepare-my-business-in-light-of-civil-unrest-risk>