

Environmental Risk Outlook 2022



About Verisk Maplecroft

We are a global risk intelligence company, providing unparalleled insight into sustainability, resilience and ESG issues, underpinned by best-in-class geospatial data and analytics.

As organisations strive to understand and adapt to a fast-moving world, we empower them to put the environment, human rights and political risk at the heart of their decision-making. We do this by providing unparalleled intelligence on sustainability, resilience and ESG – stitching together these disparate issues into an interconnected global view, built upon objective insight and data.

By thinking 'big picture' we capture what matters most to our partners; making positive outcomes possible in a time of change; helping people, business and societies become stronger; creating value with values.

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Verisk Maplecroft’s Environmental Risk Outlook 2022 covers key and emerging environmental issues that investors and companies cannot afford to ignore if they want to mitigate their exposure to financial, reputational, and regulatory risks.

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Executive summary



Will Nichols
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As anyone who's had to deal with the widening array of complex climate risk standards and benchmarks will testify, managing climate change is a complicated undertaking. Yet in many ways, these climate frameworks are too narrow and encourage a siloed view of what is a dense interconnected system of threats. Focusing on the exposure of assets and investments to physical risks or shifts in emissions policy excludes the plethora of secondary political, economic, social, and supply chain risks that are emerging because of rising temperatures and the push towards a low carbon economy. As a result, governments, companies, and investors might feel like they have a handle on how climate change will affect them. But the truth of the matter is, while they have plans in place to address the direct threats, they have yet to scratch the surface of the wider impacts.

Part of the reason why is spelled out in this year's Environmental Risk Outlook. A blinkered approach to these risk factors is no longer enough. Organisations must take a holistic view of ESG risks that encompasses political threat multipliers like Russia's war in Ukraine, economic drivers such as the changing face of global energy markets, and the growing human rights and ecological impacts of transition materials. Our geospatial risk data and analysis brings to life some of these key emerging trends to make it crystal clear that companies, investors, and governments able to see the big picture, and act on it, will be best placed to deal with an increasingly uncertain future.

Climate risks begin to spill over

Cascading climate risks are a case in point of the need for a broader perspective. Our analysis shows a world split into three groups of countries based on their resilience to threats triggered by climate change, such as civil unrest, political instability, food insecurity, mass migration, and worsening human rights. Certain economic, societal, and political factors can help insulate nations against these threats. But for countries like Brazil, Mexico or even China, where some of these protections are fragile, susceptibility to cascading risks could intensify. As the severity of heatwaves, storms and floods speeds up, so do the time horizons for rising global instability – raising the stakes for governments, companies, and investors.

Geopolitics starts to bite in clean energy markets

Equally, the burgeoning impacts of Russia's war in Ukraine on energy markets are still playing out in real time, leaving organisations and governments increasingly exposed to a new range of geopolitical risks and environmental realities. Asia's response to rising energy security worries has been a return to fossil fuels, casting doubt on the region's transition away from polluting fuels and enabling national and corporate backsliding on zero carbon pledges. But with Europe pushing for an accelerated transition, China's stranglehold over green energy manufacturing and mineral supplies is strengthening its geopolitical influence and allowing the country to control the pace of global change.

Scramble for minerals unearths fresh ESG risks

With Russian commodities increasingly off limits – and fears about an over-reliance on China – the EU needs new sources of key materials like nickel, potash, copper, and palladium. As existing sources reach limits, supplies will need to come from poorly regulated markets where ESG risks are less well known, upping the exposure of companies and supply chains to reputational, regulatory, and legal threats. Our Industry Risk Dataset shines a light on potential alternative markets, highlighting how Brazil, the Philippines, Laos, and sub-Saharan Africa are replete with threats to indigenous peoples and the water supplies and biodiversity they rely on.

Weaponisation of environmental regulations

Of course, a burgeoning mining industry could be a godsend for governments looking to boost post-Covid coffers. Increasingly, a small number of countries are mobilising well-intentioned environmental regulations, needed to manage mining industry impacts, as a means to achieve political goals. Ranging from galvanising political support to pressurising negotiations with commercial organisations or even lending a protective veneer to expropriation plans, these moves could be the next resource nationalism battleground. For miners, getting ahead of upcoming policy changes and working to best practice, standard-setting environmental procedures will be vital in avoiding disruptions, closures, or even losses of assets.

World 'unprepared' for magnitude of cascading climate risks

Companies and investors risk being blindsided by secondary climate impacts such as migration, political unrest, or even conflict



Will Nichols
Head of Climate and Resilience



Dr Richard Hewston
Director, Climate and Resilience



“As the intensity of heatwaves, storms and floods speeds up, so do the time horizons for rising global instability.

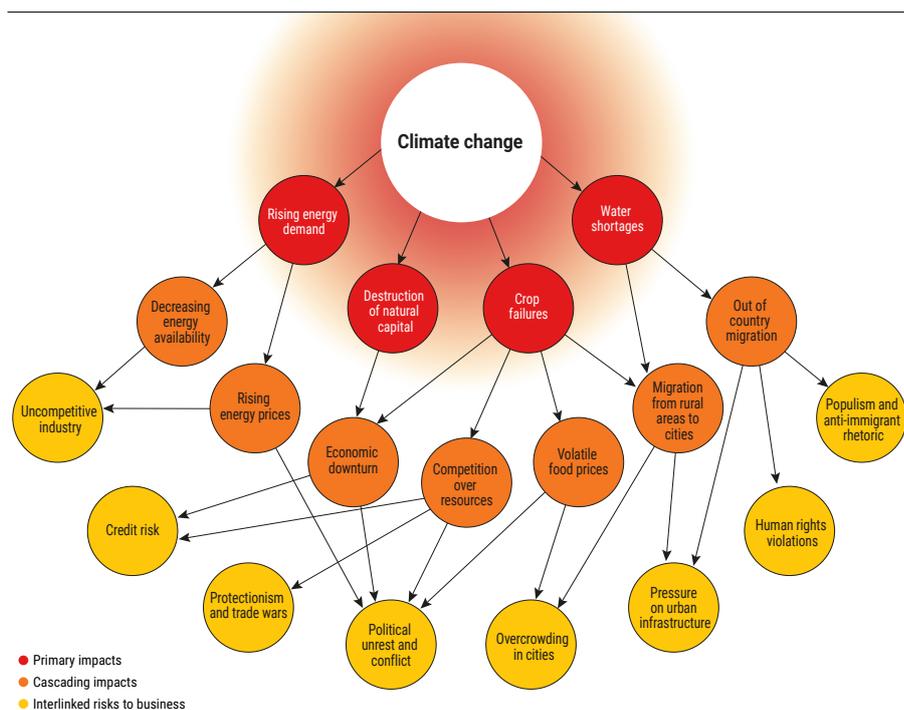
Civil unrest, political instability, food insecurity, mass migration and worsening human rights are the baked-in secondary impacts of climate change, but you wouldn't know that from the undercooked approach of governments and business. As the extreme weather events the world is already experiencing become more frequent, they will trigger a cascade of these second-order climate risks across a huge swathe of countries.

And it's not just the usual suspects to look out for. Africa and Asia's developing economies will undeniably bear the brunt, and the developed world will have to respond as these issues press increasingly on their borders. But, according to our new research assessing the susceptibility of countries to cascading risks, economically and geopolitically strategic nations such as Brazil, Mexico, Vietnam and Russia are also in a dangerous position. Even China could find itself under pressure if change continues to accelerate. If countries like these succumb to extreme bouts of climate-induced instability, the knock-on impacts could overwhelm economies and populations across the globe.

Organisations and governments are beginning to create extensive mitigation plans for physical climate threats, yet the low levels of investment in looking at the secondary risks show that most are almost entirely unprepared to deal with the wider political, economic and developmental impacts of a warming planet. And as the intensity of heatwaves, storms and floods speeds up, so do the time horizons for rising global instability.

Identifying where these impacts will become most prevalent – and which countries are most at risk – is vital in managing cascading threats for organisations aiming to reinforce their long-term resilience and for governments looking at external factors threatening their own interests.

Figure 1: Simplified flow of cascading climate risks



Source: Verisk Maplecroft

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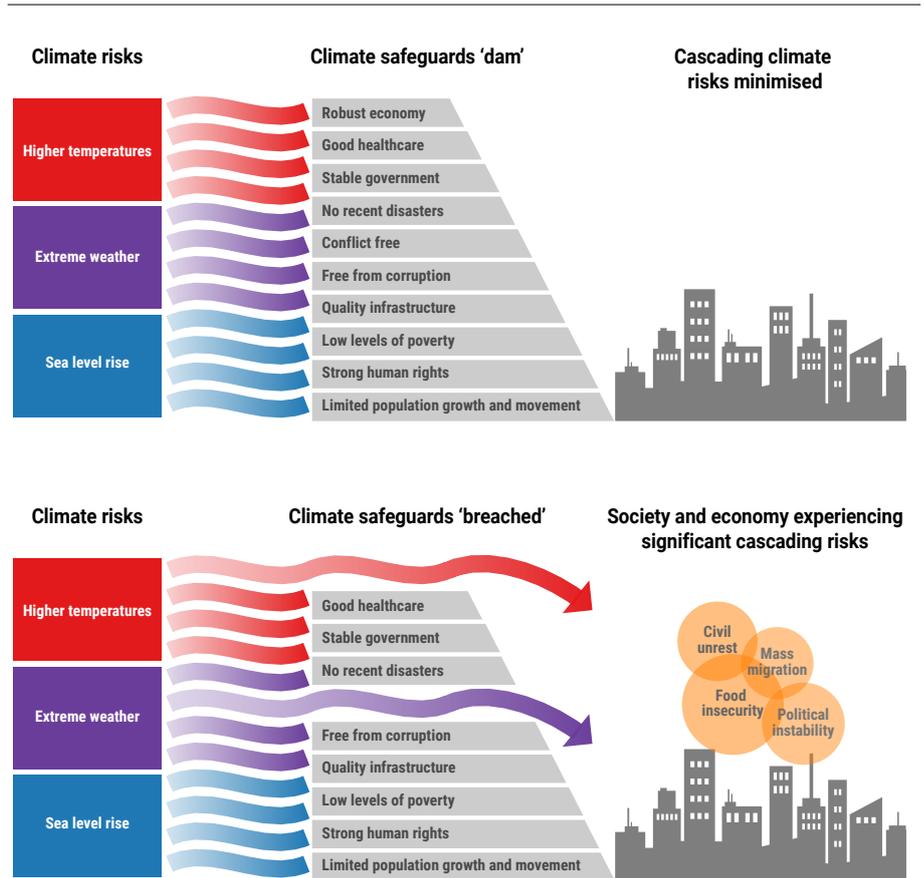
What the data shows is that the world is split into three near-even groups we've termed 'insulated', 'precarious', and 'vulnerable'.

Assessing the threat of second-order climate risks

To measure the wide-ranging threats from cascading risks we turned to our portfolio of risk indices and a statistical method called cluster analysis to assess the performance of 196 countries across 32 structural and dynamic issues. The resultant Cascading Climate Risk Resilience Model (CCRRM) includes a broad spectrum of interconnected factors, such as physical exposure to weather-related events, political stability, economic power, resource security, civil unrest, poverty, the human rights situation, conflict, and strength of infrastructure – all of which are crucial to a country's resilience.

Think about each one of these factors as a block in a dam: the more blocks a country has in place, the stronger the protection it creates for its society. But if the blocks become fragile, broken, or crumble entirely, the whole structure is undermined, magnifying the potential for cascading climate risks to break through and flood a country with destabilising impacts.

Figure 2: Countries become more susceptible to cascading risks as safeguards crumble



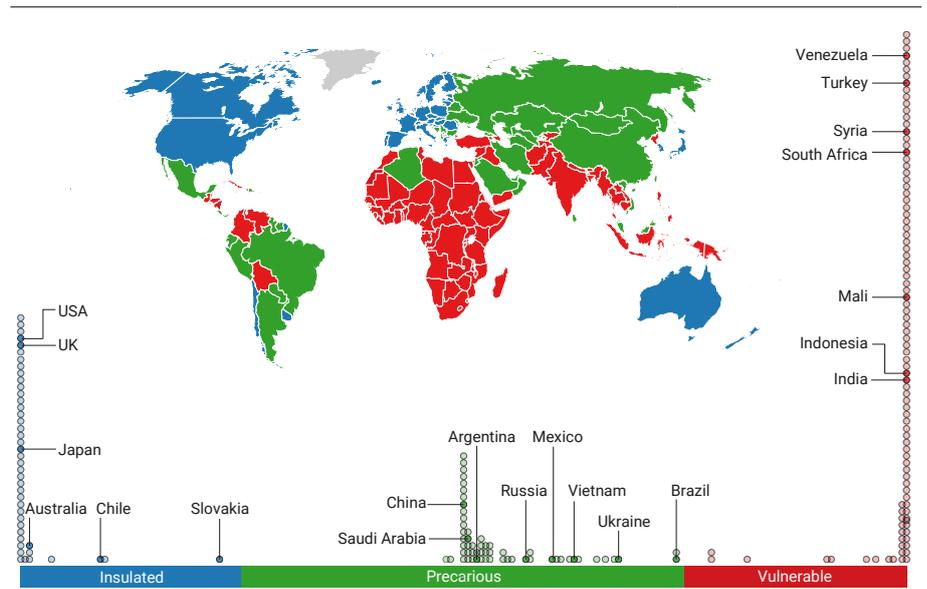
Source: Verisk Maplecroft

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Determining the shared characteristics and differences between countries across five groupings of indicators – climate change vulnerability, economic development, health, political risk and social issues – enables us to identify which are best placed to avoid cascading climate risks. What the data shows is that the world is split into three near-even groups we've termed 'insulated', 'precarious', and 'vulnerable' (see figure 3).

“ The major emerging markets of India, Indonesia, South Africa and Turkey lack the safeguards needed to protect their societies.

Figure 3: A world divided between ‘insulated’, ‘precarious’, and ‘vulnerable’ nations



Source: Verisk Maplecroft

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It is no surprise to see that our ‘insulated’ group predominantly includes the world’s wealthier countries, while the ‘vulnerable’ group is broadly characterised by those with lower incomes.

The most ‘insulated’ nations, like the US, Japan or the UK, balance out climate threats through strong governance, low levels of conflict, robust social policies, and their ability to provide sufficient food and comparatively high-quality infrastructure. ‘Vulnerable’ countries lack these safeguards. Some, like Mali, Syria, and Venezuela, are already hotspots for climate-driven migration and conflict. Others, including the major emerging markets of India, Indonesia, South Africa and Turkey, lack the safeguards needed to protect their societies as the threat of cascading risks multiply, putting not only their domestic economies at risk, but also threatening to upend supply chains stretching across the globe.

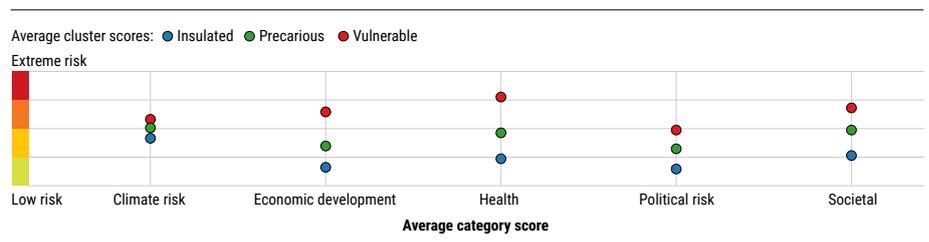
Neither the ‘insulated’ or ‘vulnerable’ groups’ exposure levels to secondary-level climate risks are likely to change significantly. That said, cascading impacts are not limited by political boundaries and so a current ‘insulated’ nation might find itself dealing with the knock-on impacts of a crisis in a neighbouring ‘vulnerable’ country that spurs mass migration, for example.

However, it is the countries that reside in the ‘precarious’ middle group, including Brazil, Mexico, Russia, Saudi Arabia and Vietnam, where the metaphorical dam has fractures that could weaken their overall structural strength and ultimately their ability to respond to large-scale emerging threats.

As shown below, ‘precarious’ countries’ average exposure to climate risk is closer to that of ‘vulnerable’ countries than their ‘insulated’ counterparts. While they share some of the safeguards seen in ‘insulated’ countries, these protections are often less robust. Small shifts in these categories could easily see these ‘precarious’ countries tumble into the ‘vulnerable’ group – hence their name – increasing the threat of cascading climate risks affecting the populations, investments, business operations, and supply chains located there. Companies able to predict where climate-related instability will occur will be better equipped to protect investments, bring in mitigation measures or even switch suppliers, avoiding costly disruption or reputational issues.

High-risk societal issues combine in countries like Brazil, Iran or Sri Lanka to raise the threat of political unrest, violence and even conflict.

Figure 4: Average scores across the risk factors highlight the disparity between clusters



Source: Verisk Maplecroft

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The graphic below shows the 15 ‘precarious’ countries that share the highest percentage of traits, or structural characteristics, with the ‘vulnerable’ group. Small changes across climate, economic development, health, political, or societal risk indicators could push these nations into the ‘vulnerable’ cluster.

High levels of climate threats are apparent across the group, but high-risk health indicators across a host of countries, including Mexico, Peru, Ukraine and Vietnam, suggest susceptibility to rising heat stress and increased prevalence of diseases related to climate change. High-risk societal issues, such as urban population growth or violations to migrant workers’ rights, combine in countries like Brazil, Iran or Sri Lanka to raise the threat of political unrest, violence and even conflict, which further undermines a government’s ability to tackle climate risks.

Figure 5: Small shifts in risk factors could tip ‘precarious’ countries into the ‘vulnerable’ group

Country	% Shared traits with ‘vulnerable’ group	Climate risk	Economic development	Health	Political risk	Societal
Brazil	48	High risk	Medium risk	Medium risk	Medium risk	High risk
Guyana	48	Medium risk	Medium risk	High risk	Medium risk	High risk
Ukraine	35	Medium risk	Medium risk	High risk	High risk	Medium risk
Maldives	34	Medium risk	Medium risk	Medium risk	Medium risk	High risk
Jordan	32	High risk	Medium risk	High risk	Medium risk	High risk
Iran	30	High risk	Medium risk	Medium risk	High risk	High risk
Mongolia	26	Medium risk	Medium risk	High risk	Medium risk	Medium risk
Vietnam	25	High risk	Medium risk	High risk	Medium risk	High risk
Palau	24	Medium risk	Medium risk	Medium risk	Low risk	Medium risk
Sri Lanka	22	High risk	Medium risk	High risk	Medium risk	High risk
Peru	21	High risk	Medium risk	High risk	Medium risk	High risk
Mexico	20	High risk	Medium risk	High risk	Medium risk	High risk
Turkmenistan	15	Medium risk	Medium risk	Medium risk	High risk	High risk
Ecuador	15	High risk	Medium risk	High risk	Medium risk	High risk
Russia	14	Medium risk	Medium risk	Medium risk	High risk	Medium risk

Source: Verisk Maplecroft

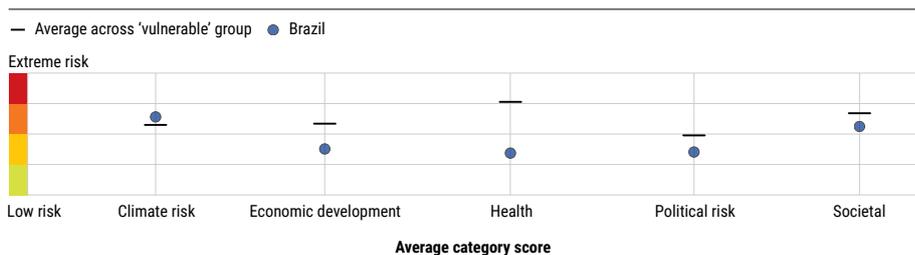
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“ Dependency on agriculture is a key factor in a country’s susceptibility to cascading climate risks.

Increasing social risk leaves Brazil on the brink

Dependency on agriculture is a key factor in a country’s susceptibility to cascading climate risks. Brazil’s coffee, sugar cane, beef and soy industries attract huge investment from overseas, making them critical to the economy, but they are also highly sensitive to climate shocks and longer term climate change. Our analysis shows the country is teetering on the edge of falling into the ‘vulnerable’ group, with which it shares 48% of traits – a change of just three percentage points would tip Brazil into that cluster.

Figure 6: Brazil tumbling towards the ‘vulnerable’ group



Source: Verisk Maplecroft

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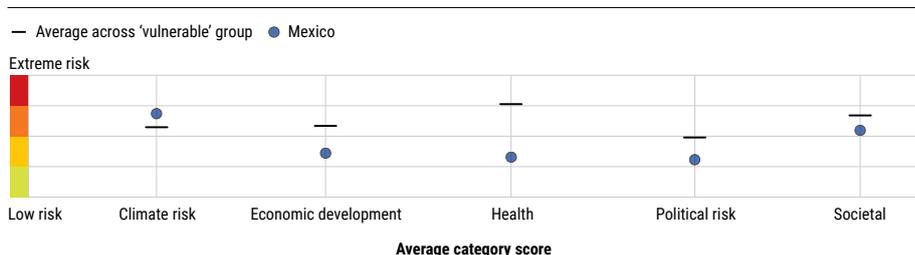
Declining social scores in concert with increasing physical climate threats have the potential to trigger a chain reaction in the country. Secondary risks like rising migration would likely shrink the agricultural workforce, leading to reduced outputs, less revenue for the economy and greater food insecurity, which, in turn, could drive civil unrest and derail government stability.

Potential tipping points that would make cascading impacts more likely to emerge come in the shape of further negative changes in government effectiveness and stability, and the rule of law. All of these have declined in the past year under President Bolsonaro. A similar trajectory next year could well see the country join neighbours Bolivia, Colombia, and Venezuela in the most at risk bracket.

Mexico already in the midst of climate cascades

Mexico’s risk profile is a near match for Brazil. While Mexico is a ‘precarious’ country, climate risk here is significantly greater than the average across the ‘vulnerable’ cluster, driven by acute water stress. Pervasive corruption and an undercurrent of civil unrest keeps political risks close to that of the average ‘vulnerable’ country, while societal risks like violations of migrant workers’ rights and modern slavery also have a similar profile. And even though Mexico’s economic development is comparatively strong, the country’s post-Covid recovery has stalled and inflation is higher than at any point over the past 20 years.

Figure 7: Climate change will heap pressure on Mexico’s economy and society



Source: Verisk Maplecroft

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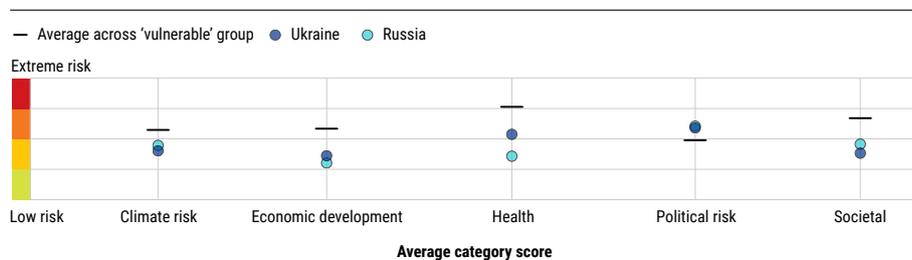
“ War-ravaged Ukraine serves as an example of how conflict will exacerbate the susceptibility of a ‘precarious’ country to cascading risks.

Mexico is already shouldering the load of central American migration and flows of people from across the region will only increase as climate change accelerates. Not only will this put pressure on the country’s creaking infrastructure, but it also exposes migrants to high levels of crime, rights abuses, and a political backlash. Further step changes in violence and instability could put Mexico’s integral role in US and Canadian supply chains at risk.

Geopolitical shockwaves

It is not difficult to see why countries burdened with poor governance risk factors might want to focus attention outside their borders if migration, civil unrest, and human rights abuses at home are exacerbated by climate change. Equally, it would be tempting to relieve domestic shortages of land, minerals, food, or water by seizing a better-placed neighbour’s resources, potentially sending them spiralling into a crisis.

Figure 8: Russian invasion could prove a tipping point for Ukraine



Source: Verisk Maplecroft

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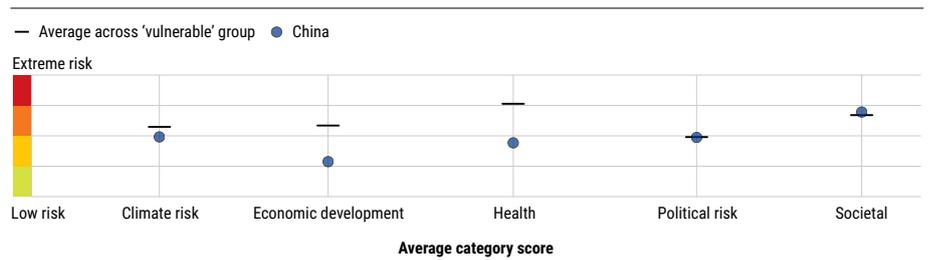
War-ravaged Ukraine serves as an example of how conflict will exacerbate the susceptibility of a ‘precarious’ country to cascading risks. Currently, it shares 35% of traits with the ‘vulnerable’ group but it is difficult to see how the ongoing conflict with ‘precarious’ counterpart Russia will do anything but lower its resilience further. Scores for conflict intensity and government stability have plummeted since 2021-Q4, pushing an already ‘precarious’ country closer to the brink. The war will perpetuate migration flows by destroying infrastructure and housing, while undermining political stability. Loss of income from agricultural and materials exports will also weaken the country’s ability to manage climate shocks like floods or heatwaves.

Russia’s aggression might not stop at Ukraine though. Putin could again seek to distract from a steady erosion of economic power and geopolitical relevance through conflict. Against this backdrop, neighbouring countries will watch with caution at how Russia deals with rising temperatures melting the permafrost that supports its vast Arctic extractive infrastructure. If it is ill-prepared, the mining and oil and gas industries could be crippled, tanking the resource-dependent economy. Such conditions are ripe for unrest, violence, and populism that could again be channeled into regional posturing and war.

China provides another pertinent example of a ‘precarious’ country where the impacts of cascading climate risks could extend beyond its borders. The country is a long way from both the ‘vulnerable’ and ‘insulated’ nations – sitting squarely in the ‘precarious’ bucket. Yet its scores are riskier than the ‘vulnerable’ cluster average across several measures, including civil unrest, corruption, democratic governance, modern slavery, and rule of law.

“ The danger is that governments are simply not aware of the scale of the issue, or do not have the scope to prepare because they are already fighting multiple crises.

Figure 9: Societal factors could harm China’s resilience



Source: Verisk Maplecroft

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China is the number one global destination for FDI, and the country’s relatively strong scores in economic and health factors are currently maintaining its safeguards. However, negative shifts in political or societal risk could see its susceptibility to cascading climate risks climb.

There are established links between warmer temperatures and increased levels of unrest; throw in urban population surges and then a recurrence of the type of protests seen in Hong Kong is a real possibility. Such large-scale events would have the potential to severely disrupt Western supply chains and stymie the country’s economic output. A heavy-handed response from authorities and security forces to large-scale civil unrest would also be all but inevitable. Rural-urban migration is already regulated but the Chinese Communist Party (CCP) could impose more draconian measures in the interests of social stability, effectively limiting the prospects of people outside the cities, ultimately paving the way for more widespread unrest, poverty, and food shortages in those parts of the country. Ultimately, the CCP could face a situation where foundational building blocks are removed for the country’s rural dwellers, creating a domestic division between its ‘insulated’ cities and ‘vulnerable’ hinterlands.

Today’s risk is tomorrow’s emergency

Cascading risks are already emerging and in some cases lie just over the horizon. The danger is that governments are simply not aware of the scale of the issue, or do not have the scope to prepare because they are already fighting multiple crises. Internal weaknesses and external threats will combine to drag down a nation’s overall resilience, and no one country will be fully immune. Addressing shortcomings at the societal, health, political, and economic levels will help create a stronger barrier against indirect climate threats cascading across societies and economies. As we said at the start, the dam is only as strong as its weakest block.

But it is not just governments that have a blind spot to these risks. The majority of businesses are not currently factoring them into scenario analysis and risk management approaches – and that needs to change.

Assessing the potential for cascading risks is the first step to closing this resilience gap. But it is difficult. By nature, these risks are unpredictable, diffuse, and hinge on a host of influencing factors. Stress testing business and investment strategies against high-impact scenarios will enable entities to identify, map out and prepare for cascading impacts. Getting ahead of the risks well before they snowball into direct ESG threats to operations, assets, and investments will be crucial as climate change becomes ever more apparent.

Green energy dilemma stirs geopolitical hornet's nest

Asia becomes fulcrum in global energy transition tussle



Dr Kaho Yu
Senior Asia Analyst



“ Russia’s invasion of Ukraine has reignited the energy security vs. energy transition dilemma for a whole swathe of countries.

Climate change is rightly near the top of the global agenda, but diverging views on the pace of decarbonisation are moving further apart – and for one good reason. Russia’s invasion of Ukraine has reignited the energy security vs. energy transition dilemma for a whole swathe of countries, including those that were previously committed to slashing emissions. With renewables not yet ready to make up for the severe disruption to oil and gas markets due to the crisis, concerns over energy supplies are spiking. In March 2022, the International Energy Agency re-introduced energy security as a policy priority alongside its long-standing energy transition agenda, making them twin goals for the global energy system. A stance that is now mirrored across the world.

Against this backdrop, we have identified key trends that are shaping climate politics and the new economic interdependencies of green energy. First, the global division on climate politics is expanding. Second, the fossil fuel supply chain is shifting towards Asia. Third, the region’s rising dominance of green energy markets is well underway. The implications of these trends are far-reaching for companies sourcing from the region and investors. These factors not only provide traditional oil and gas producers breathing room among ever louder calls for divestment from fossil fuels, but they also allow China to continue to utilise the strength of its market for geopolitical advantage.

The North-South divided over climate politics

The Russia-Ukraine crisis has deepened the global division on climate action. While energy insecurity has sped up the energy transition in Europe, it has also pushed some Asian countries to rely more on fossil fuels to ensure basic supplies. Although opportunities in Asia for renewables remain robust, major emitters have doubled down on coal to ensure basic energy supplies. For example, the People’s Bank of China has increased special loans for clean and efficient use of coal to RMB300 billion (USD45 billion), almost four times more than the financial support for renewables.

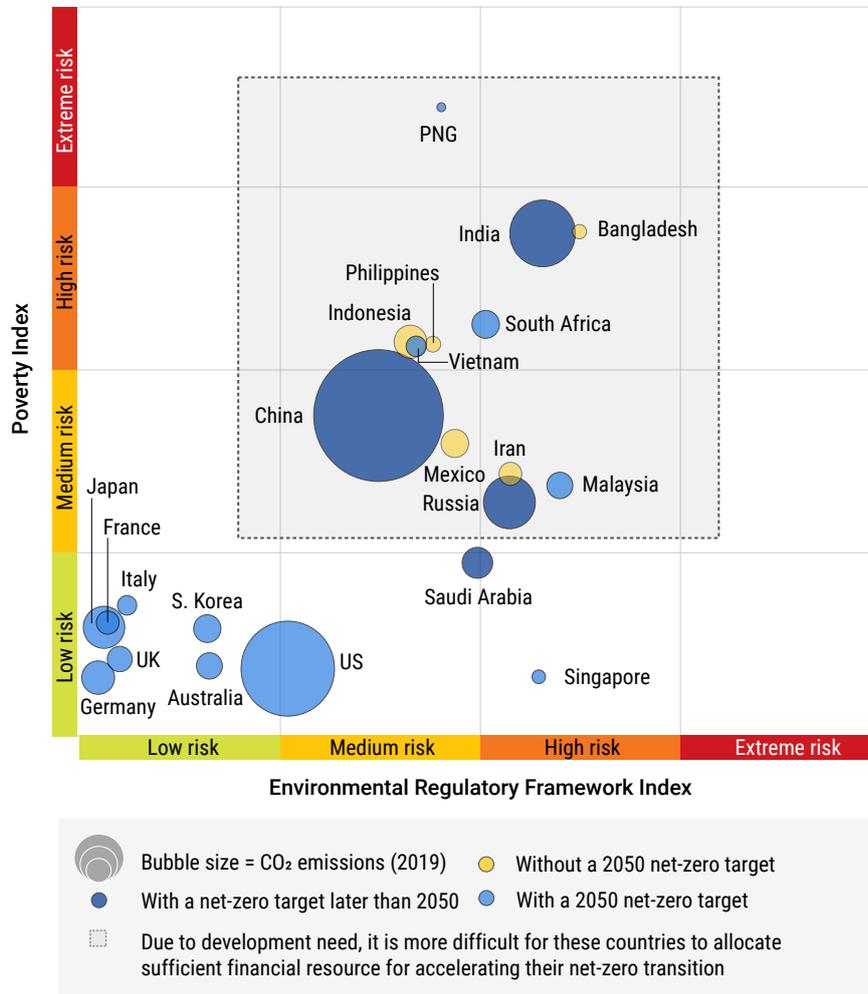
Figure 1 shows that lower income countries, those with weaker scores on our Poverty Index, are less likely to adopt a stringent carbon policy. Despite carbon neutrality pledges, these countries have prioritised domestic development agendas, such as poverty eradication, economic growth and energy security. Their economies are more sensitive to the social impact of a robust carbon policy, such as unemployment caused by less investment in fossil fuels. Therefore, developing countries, especially China and India, will likely take a much slower transition path than developed countries, such as the US and EU.

The global division on emissions has brought many developing countries together in terms of their climate politics. Most notably, despite their ongoing border tensions, China and India jointly led a last-minute intervention to weaken the language on fossil fuels in the Glasgow Climate Pact at COP26. Their negotiating position calling for “climate justice” benefits from the support of many cash-strapped economies. We expect these developing countries to stand together as a bloc negotiator and press rich countries for more support in climate finance, mitigation and adaptation.

“Deteriorating economic conditions have undermined efforts to address social and economic inequities that in turn fuel political instability.

Figure 1: It is difficult for developing countries with poverty eradication agendas to adopt a stringent carbon policy

Environmental Regulatory Framework Index vs Poverty Index (selected countries)



Source: Verisk Maplecroft

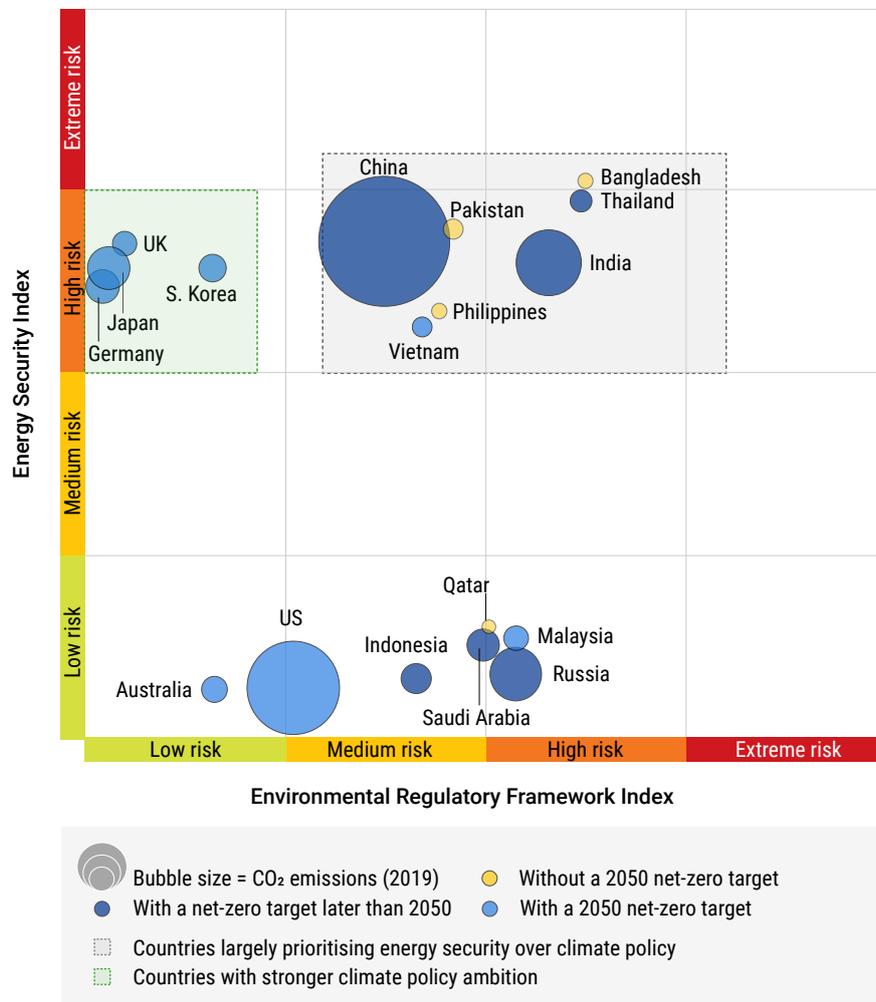
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Global gas supply chain shifting eastward

The global call for the phasing-out of fossil fuels will spawn new patterns of trade interdependence and shift bilateral relations. Major fossil fuel producers, such as Saudi Arabia and a sanctioned Russia, have faced significant fiscal challenges from declining oil revenues amid stakeholder pressure for divestment from carbon-intensive projects. Deteriorating economic conditions have undermined their efforts to address social and economic inequities that in turn fuel political instability. Their national expenditures on building up the security forces to address domestic unrest, regional instability and geopolitical competition are also sensitive to changes in oil prices.

Figure 2: Major gas producers are likely to shift their exports to Asian buyers which prioritise energy security over climate

Environmental Regulatory Framework Index vs Energy Security Index (selected countries)



Source: Verisk Maplecroft

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“ The burgeoning gas trade between Russia and China will reinforce closer political and strategic cooperation.

Global division on climate action has also become a silver lining for major oil and gas producers. Figure 2 shows that while both Asian and European economies are exposed to high and extreme risks to their energy security, they have distinct environmental regulatory frameworks for their energy transition. Renewable energy is considered a core part of the EU’s energy security formula, but it is not yet an immediate solution for most Asian developing countries. Over the next decade, Asia will continue to rely on fossil fuels, especially natural gas which is considered a transition option to balance decarbonisation goals and development needs. It becomes an opportunity for gas producers to explore new markets in Asia when demand for natural gas decreases in developed countries with stringent environmental regulations.

“ Strategic competition over green energy has made the global supply chain highly vulnerable to geopolitical risks.

The trend for gas producers pivoting to Asia allows resourceful producers, such as Saudi Arabia, to build a business cycle that uses revenue from gas to support decarbonisation while maintaining their geopolitical influence. It even provides Russia a little breathing space to accelerate the shift of resource exports eastwards to partially buffer its losses in Western markets due to sanctions. In particular, we expect the burgeoning gas trade between Russia and China to reinforce closer political and strategic cooperation in the face of more unified Western alliances.

Clean energy becoming geopolitical lever

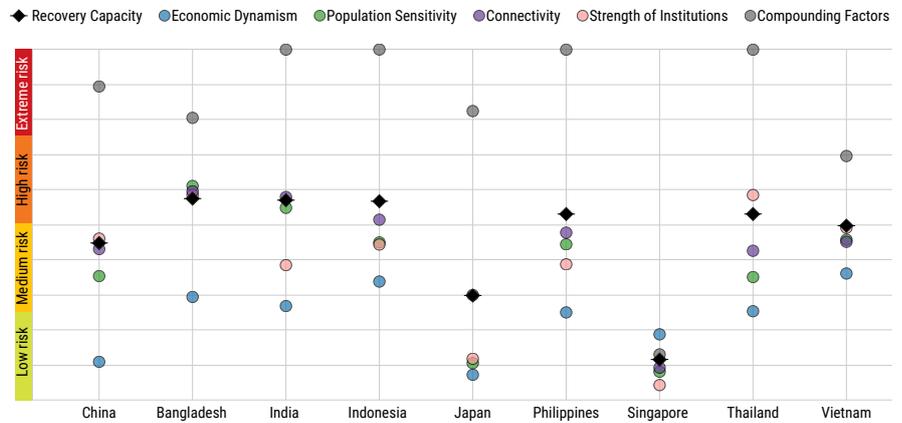
In the global competition for dominance of the green tech space, China has already secured significant control over the global supply chain of materials that are indispensable inputs for clean energy development. China's solar manufacturing accounts for over 70% of the world's total capacity. The country is also the source of 60% of the world's rare earth minerals and a key refiner for lithium and cobalt, accounting for over 60% and 70% of the global share respectively. And China is rapidly building up its manufacturing capacity for EV battery components and green hydrogen electrolyzers to cater to increasing orders from overseas.

We expect China's high levels of manufacturing capacity for clean technology to return as soon as lockdowns ease. Figure 3 uses a five-pillar framework to assess the ability of a country to bounce back from the pandemic disruption. It shows that China's overall performance is marginally better than that of many other Asian developing countries with similar labour costs. Despite its poor performance on compounding factors, such as exposure to civil unrest and regional conflicts, China remains a relatively competitive manufacturing hub due to its robust economic dynamics. In response to its dominance, some strategic competitors of China have begun to diversify the supply chain of strategic materials to other Asian countries via government-led initiatives such as the Quad Critical Minerals Partnership Act, but any relocation could take years.

Strategic competition over green energy has made the global supply chain highly vulnerable to geopolitical risks via cycles of retaliatory measures. For example, the US solar industry has to rework its supply chains after the Biden administration banned Chinese solar modules that are not free of forced labour. Although China is unlikely to bluntly ban its exports in the near future, a series of protective measures, including the Export-Control Law (2020), indicate Beijing's intention to tighten its control over the supply chain of strategic commodities, including critical materials. It is not immediately clear if these supply chain disruptions will affect the pace of the global energy transition but we expect them to increase the compliance and due diligence cost of international companies sourcing from China.

Figure 3: China’s overall performance in pandemic recovery is marginally better than that of its Asia peers

Recovery Capacity Index 2021-Q1 – country comparison



The Compounding Factors pillar is formed of indicators such as civil unrest, conflict intensity, exposure to regional conflict, terrorism intensity and natural hazards

Source: Verisk Maplecroft

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Energy dilemma hindering climate policy actions

The fractious geopolitics of green energy is not set to ease any time soon amid a widening global division on energy transition and supply insecurity driven by the Ukraine crisis. It will remain a key obstacle to greater climate policy ambition, especially in developing markets.

The collective effort of Asian countries in climate negotiations, the eastward shift of gas producers, and China’s dominance of the clean energy supply chain will combine to have significant impacts on the trade in global commodities and the geopolitical landscape.

Companies face ESG trade-offs in scramble to replace Russian minerals

Shifts to developing markets for sources of transition metals and fertilisers will expose companies to new ESG risk



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Companies will be eager to reduce their dependence on Russia and Belarus due to reputational and disruption risks.

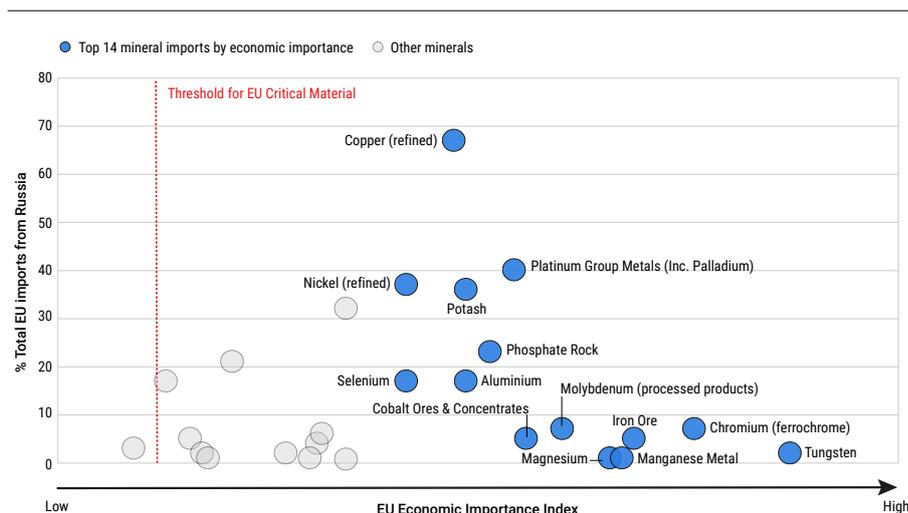
While the ongoing conflict in Ukraine has focused the attention of markets on the European Union’s dependence on Russian oil and gas, the war has also highlighted the scale of the EU’s reliance on its strategic rivals for critical minerals.

EU sanctions against mined and refined materials are a real possibility. Taken in tandem with ongoing conflict-related disruptions and recycling rates hitting a ceiling, new sources for minerals such as potash, palladium, refined copper and refined nickel will be required urgently if the war continues (see figure below). EU importers will also need to tap alternative markets for other materials traditionally imported from Russia, including iron ore, phosphate rock, aluminium and manganese, as well as less-heralded transition metals such as selenium, a vital input to solar panel production.

Even if sanctions are not applied, companies will be eager to reduce their dependence on Russia and its ally, Belarus, due to reputational and disruption risks. European nations will also be reluctant to turn to strategic rivals such as China for replacement imports. This will force companies into lesser-known markets where the regulatory environment is not as mature, raising the potential exposure of supply chains that are critical to manufacturing, the green transition and food production to a wider set of ESG risks.

For mining, threats to natural capital are a key challenge, but labour rights and human rights could also enter the equation. As new source countries for minerals are found, companies will have to put robust ESG policies in place to ensure higher levels, or different types, of threat do not blindsides them and put corporate reputations at risk.

Figure 1: Top 14 most economically important EU imports placed at risk due to the conflict in Ukraine



*Import data includes United Kingdom

Source: European Union - Critical Raw Materials Resilience report, 2020 (Palladium is share of global production) average imports 2012 to 2016.

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“ Growing investor scrutiny on natural capital illustrates the necessity of identifying ESG risks early.

Scramble for new sources for materials exposes unfamiliar risks

Alongside the rise of new benchmarks such as the Taskforce on Nature-related Financial Disclosures (TNFDs) and a slew of new laws around forced labour in supply chains, growing investor scrutiny on natural capital illustrates the necessity of identifying ESG risks early. Doing so will enable organisations and commodity investors to avoid muddying the clean energy transition and polluting supply chains.

Verisk Maplecroft's forthcoming Industry Risk Analytics data, which measures 51 different risks for 198 countries across 80 sectors, reveals the different levels of risk that exist for extractive companies according to their countries of operation. The data will enable both these companies and the organisations buying refined materials from them to identify ESG risks and trends in new and existing markets.

Greater demand on undeveloped copper reserves in emerging markets

Russia provided the lion's share of EU imports of refined copper in 2020 and boasts 7% of the world's recoverable copper ore reserves. Hence, this Russian-sourced copper is widely incorporated into clean energy technologies developed in the EU. The fallout from Russia's invasion of Ukraine means that new sources may now have to be found, but our Industry Risk Analytics data shows low-risk alternative producers are thin on the ground.

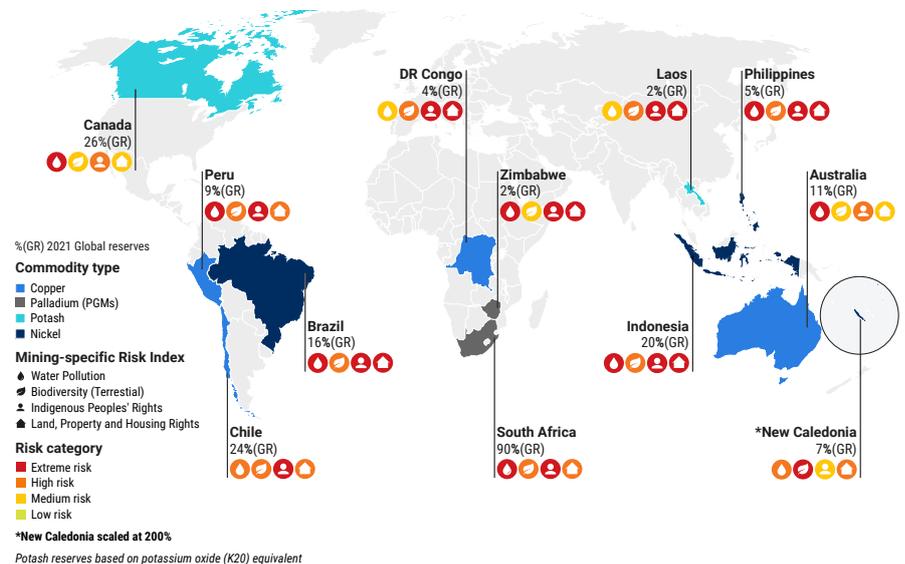
Copper already has a high-risk ESG profile across major producers. The mining industries in Chile, Peru and Mexico, which together account for nearly half of total global production, are all flagged as high or extreme risk on key ESG indices (see map). Moreover, the majority of recoverable reserves are also in countries where the mining industry is considered high risk for a range of ESG issues at the national level. These include countries such as DR Congo, Zambia and Indonesia, where high environmental and social risks are also compounded by high levels of corruption and poor government oversight.

Untapped potash reserves in the Middle Eastern and Southeast Asia regions

Another key input at risk is potassium-based fertiliser, which fuels the EU's agricultural industry. There is no artificial process to manufacture potassium as it is derived solely from mineral potash salt deposits. The quantity of unrefined raw material produced places huge demands on water resources – land use intensity, water pollution and water stress are key indicators driving high ESG risks for the mining sectors in potential alternative countries.

Given over a third of the EU's potash imports in 2020 came from Russia, and that Belarus – another key supplier in 2020 – is already sanctioned, the race to find alternative sources is critical. Canada has over a quarter of global reserves and can act as a low-risk alternative, but other countries with higher ESG risks may also be used to fill the void.

Figure 2: Shifts to new sources of critical materials will expose companies to new ESG risks



Source: Verisk Maplecroft (2022); US Geological Survey (USGS) (2022); Australian Trade and Investment Commission (2022) © Verisk Maplecroft 2022

EU importers will need to tap alternative markets where the regulatory environment is not as mature.

Laos, for one, has an estimated half a billion tonnes of undeveloped recoverable potash reserves. At present, Chinese firms are securing a strategic foothold there. But given the country’s high levels of species richness – as reflected by the country’s high-risk score in the industry-specific Biodiversity Index for mining – and a history of land grabs and other human rights abuses linked to the extractive sector, mining in Laos is rated an extreme risk industry in our industry-specific Land, Property, and Housing Rights Index. There are also potentially large potash reserves in the Dead Sea region of Israel, a UNESCO World Heritage Site candidate with unique biodiversity and limited water resources.

Southeast Asia dominates global nickel production, presenting high ESG risks

Similarly to potash, in 2020 a third of the EU’s refined nickel supplies flowed into the bloc from Russia, fuelling industrial and electronic applications, not least in rechargeable batteries vital for electric vehicles (EVs) and other devices. Global nickel prices jumped by over 120% immediately after the invasion of Ukraine and have remained high.

Half of global nickel production occurs in Indonesia and the Philippines, both of which have significant reserves. However, as shown by the industry-specific risk indices scores, mining in both these countries is highly exposed to ESG risks, including high levels of biodiversity loss, water pollution, land grabs and abuse of indigenous peoples’ rights.

In the search for alternatives, the estimated 7.1 million tonnes of nickel reserves found in the French Overseas Territory of New Caledonia will be attractive. The territory boasts a similar scale of reserves to Russia but is also home to a wealth of unique species. As a result, it has an extreme risk classification in the industry-specific Biodiversity Index.

“ Miners will be under pressure to meet rapidly growing demand while adhering to international ESG standards.

Tesla’s long-term strategy for securing future nickel supplies focuses on New Caledonia. The company has promised to work directly with miners to minimise its environmental impact, but the sector’s performance is clouded by a small number of irresponsible operators, making it a focus for the island’s independence campaigners.

Greater pressure on African sources of palladium

A commodity that might normally go under the radar is palladium, which is widely used in catalytic converters and the production of electrodes. It is also used in hydrogen fuel cells, vital for the energy transition. Russia currently produces 40% of the world’s platinum group metals (PGMs), including palladium, most of which are imported into the EU.

The major alternative, South Africa, holds around 90% of the world’s known reserves of PGMs. The mining of these metals in South Africa, however, is linked to health and safety concerns, water pollution, habitat loss and other environmental impacts (see map above). Our commodity-specific data also flags South Africa as a high-risk sourcing location for palladium in the water stress, human trafficking and OHS Indices.

Geopolitical realignment will increase attractiveness of new sources of mined commodities

As demand for these essential materials grows, supplies of strategic commodities from domestic sources and friendly nations will only go so far in replacing those disrupted by the conflict in Ukraine. The reputational risks associated with biodiversity and other environmental and social risks in supply chains will need to be managed appropriately.

Miners will be under pressure to meet rapidly growing demand while adhering to international ESG standards. By proactively examining future ESG risks using an industry lens, decision-makers can work to ensure they avoid the damage that is inherently associated with their particular sector and operations.

Interventionism goes green

As environmental concerns emerge as a resource nationalism battleground, mining stands foremost among sectors at risk



Mariano Machado
Principal Americas Analyst,
Risk Insight



“ Environmental regulations will increasingly shape interactions between states and private companies.

Meeting global climate and environmental goals demands bold action from governments. But to cross the thin line between progressive regulations addressing climate threats and an overreach of power to achieve political goals may just be too tempting for some administrations.

From galvanising political support to pressurising negotiations with commercial organisations or even lending a protective veneer to expropriation plans, environmental regulations will increasingly shape interactions between states and the private companies extracting natural resources.

Our data identifies a sizable number of resource-rich countries that are in the frame to leverage the 'E' in ESG against operators to offset economic pressures, social discontent, and mounting investor scrutiny of broader environmental performance. As an environmentally sensitive industry that generates huge revenues, mining is among the most exposed sectors to these political manoeuvres.

Identifying common elements of policy and hidden drivers for targeting resource companies enables operators – and investors – to better manage downside risks by implementing strategies to stay ahead of regulations that are changing for reasons other than concern for the environment or population.

Misuse of environmental frameworks – a political means to an end?

To map out this emerging landscape, we've used our Resource Nationalism and Environmental Regulatory Framework indices to identify clusters of countries based on their governments' potential to spin environmental obligations – both domestic and international – into creeping expropriation mechanisms.

As shown in Figure 1, the most immediate risks for operators exist in Cluster A, which includes countries with both sharp environmental regulation and explicit willingness to intervene in economic sectors. By contrast, Cluster B features countries that boast highly liberalised economies and robust environmental oversight. Here, the risk level depends on the political disposition of the incumbent government. Countries outside these two groups lack either the means to intervene or sufficiently strong environmental policies that could be harnessed for expropriation.

Amid our Cluster A countries, we are already seeing examples of the blunt use of environmental issues to impose political ends, a trend we expect to accelerate given the current price cycle.

Take Kyrgyzstan, ranked 18th most at-risk out of 176 countries covered by our Resource Nationalism Index, where President Sadyr Japarov has fought for the nationalisation of the Kumtor mine for over a decade. After a landslide victory in 2020, his administration passed a special law to temporarily seize concessions on the grounds of violating environmental regulations – despite Centerra Gold's systematic rebuttal of such claims and third-party reports failing to corroborate allegations of grave environmental hazards. In April 2022, after pushing for an out-of-court deal, the government took full control of the country's biggest economic asset (responsible for 12% of its GDP and 23% of industrial output), but has shed little clarity on how the new authorities are planning to address these ecological concerns.

Figure 1: Overreaching environmental requirements could be weaponised against operators

Resource Nationalism and Environmental Regulatory Framework indices for 2022-Q2



Source: Verisk Maplecroft

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“We are already seeing examples of the blunt use of environmental issues to impose political ends.”

Meanwhile, Serbia saw a massive negative shift in our Resource Nationalism Index rankings in 2022-Q2 – down to 33rd from 95th place – after revoking permits for Rio Tinto’s Jadar lithium project. The decision was framed as a response to months of country-wide environmental protests, but similar protests had occurred in Serbia before without spurring governmental action. Calculations shifted when president Aleksandar Vučić identified the revocation of mining licences as a means to end ongoing protests and secure re-election. Just days after re-election, Vučić stated that it was wrong to revoke the permits, exposing the political motives behind the original decision.

Mexico, the 3rd riskiest country for resource nationalism globally, sits on the bottom rung of Cluster A. President López Obrador (AMLO) is under fire for his inconsistent environmental policy and double standards, where environmental concerns are raised when involving “predatory” private ventures but largely ignored for state-owned enterprises. The ongoing dispute with Vulcan (US’s largest producer of construction materials, with operations in Yucatán) exemplifies this duality. The company has been engaged in a NAFTA arbitration with Mexico since 2018 over shutdowns, and AMLO recently ordered a halt to operations on environmental grounds – despite his flagship infrastructure Mayan Railway receiving criticism from environmentalists in the same area.

“ Political situations are dynamic, and a change of government can totally alter the risk landscape.

Elections up the environmental ante in the Americas

Meanwhile, Cluster B contains countries that have the potential for intervention given their environmental laws but have not demonstrated a tendency towards interventionism. For instance, Canada’s strong regulations provide the legal basis for potential recourse against projects. While upholding environmental rights can impact operations, the country’s low-risk placing on our Resource Nationalism Index suggests interventionism is not a driver of such regulatory changes – for now at least.

But political situations are dynamic, and a change of government can totally alter the risk landscape. As the trend arrows in the graph highlight, political shifts could trigger very different outcomes. The salient risk for operators is for countries with robust conservation regulations to use these legitimate safeguards as weapons against the extractive sector.

Latin America runs point on this trend: amid unprecedented political volatility, the ongoing regional shift to the left has an openly anti-mining discourse that dominates campaigning. Although this is likely to be reined in once a politician or party is in office, operators face an uncertain and potentially fast-changing policy, regulatory, and social landscape.

Take Colombia, where constitutional rulings have set a precedent for environmental protections overturning pre-existing mining operations (such as Eco Oro Minerals Corp claim of 2016). Now, President-elect Gustavo Petro has scored a historic victory, and the extent to which he will take his pledge to enforce stricter environmental requirements – borderline banning operations – remains a question mark.

Brazil is one to watch. Should former president Lula Da Silva defeat Jair Bolsonaro in the October 2022 election, we expect a nationalistic government eager to restore the country’s environmentalist stance. Although this policy turnaround would be globally welcomed, the government would include factions pushing for growth retraction across all industries, but mining and agriculture in particular, regardless of how sustainable they are.

And in Chile, the proposed text of the new constitution rightly lends a great deal of strength to environmental concerns, given the country’s water crisis. But in the hands of an interventionist regime, these concerns would become obvious grounds to challenge existing legitimate mining operations, as a “post-extractivist” economic model might even become constitutionalised.

Moving from compliance to a standard-setting mindset

It took decades of legitimate environmental concerns to push governments and extractive companies to create, ensure and adopt sustainability standards. But the risk of these being captured by political factions willing to use environmental pretexts to advance other political interests means companies have to adopt a new playbook.

“ When there is a political will to intervene, even meeting requirements may not be enough for operators.

At a strategic level, companies must step up their commitment to climate and environmental goals. Moving from mere compliance to a standard-setting mindset will be evermore critical, as the risk of factions weaponising legitimate environmental concerns as an excuse to ramp up political support intensifies. Crucially, companies will require objective insight and data to stitch together pledges with positive outcomes and operational excellence.

Revising community and social value strategies is also crucial. Not only because of increased scrutiny by investors, communities and control bodies but because revamping these regularly has become the de facto baseline of stakeholder expectations.

But, ultimately, when there is a political will to intervene, even meeting requirements may not be enough for operators in this new environment.



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