

Climate Change Is Affecting Geopolitics – Not Just the Other Way Around

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Climate change affects relations between states and geopolitics. Until now, attention has predominantly been on the geopolitics of decarbonization – the shifting energy supply, new resource dependencies and mitigation finance. But there must be an equal focus on how climate change costs and damages are shifting geopolitics – arising in connection with economic decline, uninhabitability and uneven impact distribution.

SHIFTING RESOURCE NEEDS AND THE CONTESTED FUTURE OF FOSSIL FUELS

Climate action is entering a critical decade for implementation. The window to meet the goals of the Paris Agreement on climate change is shrinking rapidly, making dangerous interference with the climate system increasingly likely. Because countries have delayed emissions reduction, efforts to transform the energy system are likely to become more disruptive and directly impact geopolitics.

Most mitigation scenarios which project emissions reduction pathways that would keep warming below 2°C by the end of the century [show](#) a rapid decrease in coal and oil supply by mid-century. These models suggest emission peaks for coal and oil around 2020 and 2030 (depending on the underlying scenario). The energy transition pathway for natural gas is more uncertain. While some

scenarios suggest a phase-out around mid-century, others indicate continued supplies by and potentially beyond the end of the century. That said, with unprecedentedly high global greenhouse gas emissions and fossil fuel consumption, a turnaround seems far from reach.

The Trump administration's planned fossil fuel expansion, and recent efforts by some parties to reverse the UNFCCC COP28 consensus, aim to delay or hinder transformation processes. For this reason, climate and energy policies may become fragmented, with some actors doubling down on the pursuit of green transitions, and others looking to preserve established energy and economic models. Despite this, the green transition is already underway, also due to changing economic parameters. The German automotive industry provides a cautionary tale of how delaying transition decisions can mean losing market share to other players in key green technologies.

Ambitious national climate policies should imply reductions in demand for fossil fuels. Over the past seventy years, hydrocarbon suppliers have often controlled market dynamics and prices, such as through production quotas. But economic restructuring is advancing, with [most investments](#) globally now flowing into clean energy. In 2024, global clean energy investments were USD 2 trillion – almost twice that of fossil fuels. In the last five years alone, clean energy investments have grown by more than 60 percent, mostly due to spending on renewable power, grids and storage, as well as energy efficiency and end-use. This constitutes a significant change compared to just ten years ago, when fossil fuel investment still outweighed clean energy spending. During the [first global stocktake at COP28](#) in December 2023, parties to the Paris Agreement recognized the growing urgency, agreeing to “transition away from fossil fuels in energy systems in a just, orderly and equitable manner.” Most states also decided

on a global goal to triple renewable capacities and double energy efficiency by 2030 (“tripling up, doubling down”).

MESSY GEOPOLITICS OF DECARBONIZATION

Geopolitics is [commonly defined](#) as the “analysis of the geographic influences on power relationships in international relations.” This includes natural resources and, in the 21st century, also exposure to climate change effects. The [emphasis](#) on “the strategic importance of natural resources, their location, transportation routes, and choke-points,” constitutes a longstanding interest of geopolitics. While resource

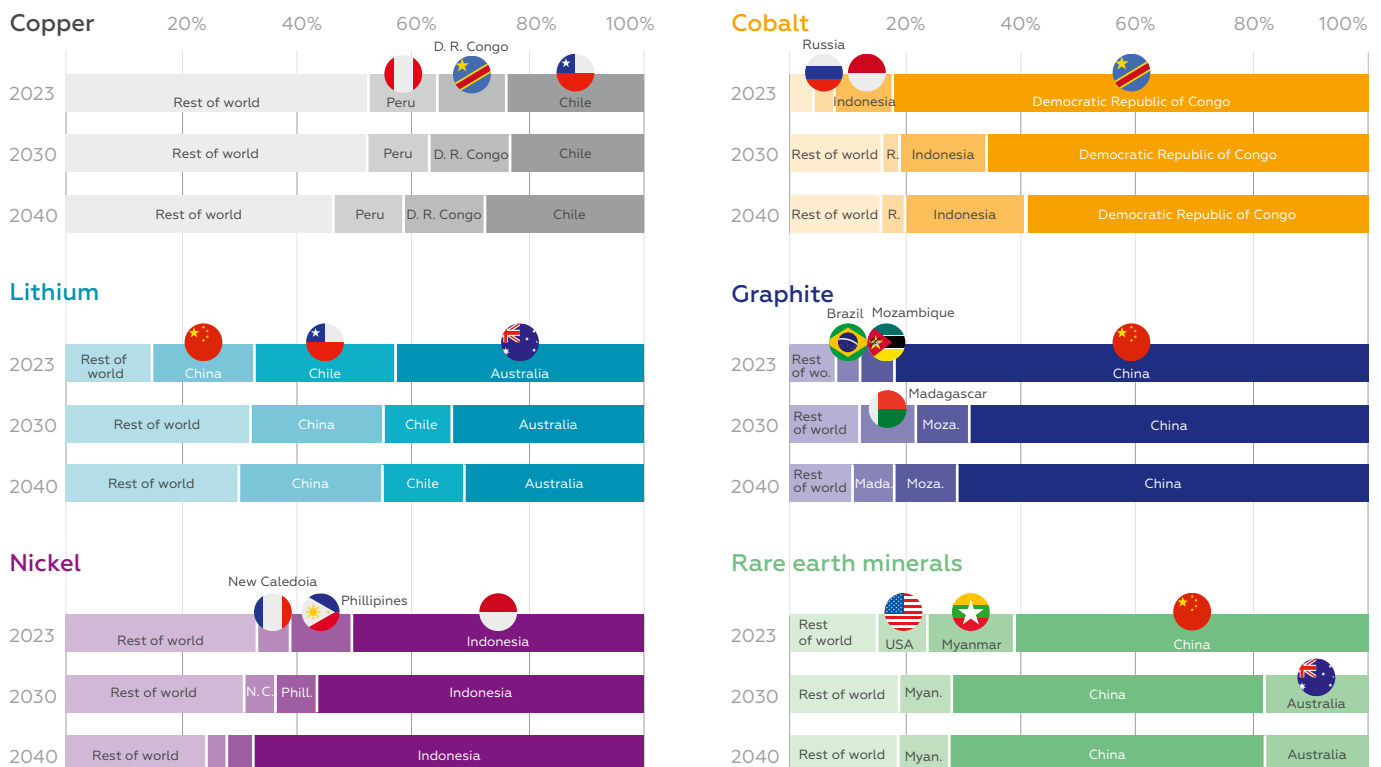
needs are shifting, such [frames of analysis](#) remain relevant.

At the same time, new geopolitical threats are emerging where climate mitigation questions monopoly power based on fossil resource extraction and where actors strive for control over new materials. Changing resource needs are shifting the focus to new players, such as countries with rich endowments of so-called critical raw materials (CRM). This comes with significant new income opportunities and a growing influence on supply chains. However, there are also new challenges connected to resource extraction, such as potential damage to ecosystems or risks to social and labor rights.

As the green transition changes the global political economy, many players can leverage previously unrealized comparative advantages and seize economic opportunities. As an illustration, significant solar or wind potential in the Gulf Region or Chile creates opportunities for cheap electricity production. This could be used to produce and export green hydrogen or to produce green steel at home. As such, high value creation and new job opportunities emerge.

Net importers of energy connect the green transition with opportunities for greater energy security and affordability. However, the uptake and dissemination depends on the supply of CRMs and processing capacities. For EU member

Geographical distribution of mined or raw material production for key energy transition minerals in the base case, 2023–2040



Note: Graphite extraction is for natural flake graphite. The figures for rare earth elements are for magnet rare earth elements only. The figure depicts the value of the top three producing countries in a given year.

Source: IEA (2024), figure appears in Global Critical Minerals Outlook 2024: www.iea.org/data-and-statistics/charts/geographical-distribution-of-mined-or-raw-material-production-for-key-energy-transition-minerals-in-the-base-case-2023-2040-2
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states, CRMs constitute the “[Achilles’ heel](#)” of the green transition due to the high dependence on foreign imports. Globally, mining and production of critical raw materials is concentrated in a few countries; the Democratic Republic of Congo supplies the vast majority of cobalt, China mines or produces most rare earth elements, and Indonesia leads in nickel supplies (see figure). Key processing capacities, e.g. for permanent magnets and batteries, are also unequally distributed, with China dominating global markets. If there was a longer-term disruption to supply chains for green technologies such as electric vehicles, solar PV, or wind turbines, it could substantially obstruct the energy transition of some regions. Dependencies may be leveraged to achieve favorable outcomes, as has often been the case in the age of fossil fuels.

Dominant market positions are also being promoted through geo-economic means. For instance, China [has enabled](#) its leading position in green technologies by fostering national champions and implementing state support measures (e.g., tax credits and government subsidies). Partly in response, the United States (US) and the European Union (EU), have developed green industrial policies to “home-shore” green value chains and “de-risk” production. Improving competitiveness, defending early mover advantages, and outright economic power plays are among the reasons for these actions. The introduction of tariffs on electric vehicles and countervailing measures between the US and China, and the US and EU, respectively, have further politicized the situation. In some cases, climate targets have become a by-product, rather than a core goal, of industrial policy. Trade conflicts around electric vehicles or solar panels may slow down the green transition, as they could prevent the dissemination of the cheapest technologies.

In this race for green leadership, many emerging and developing economies may fall behind. The World Bank

[estimates](#) that financing needs for the green transition will average 1.4 percent of GDP over 2022-30, but in lower-income countries, these may exceed 5 percent. Transition costs thus put a relatively higher burden on low-income countries. New forms of engagement, such as the Just Energy Transition Partnerships, have aimed to mobilize greater funding for domestic transitions, but also faced criticism. Critical debates about reforms of international financial institutions point to the need for structural amendments to protect the global commons.

GROWING CLIMATE IMPACTS AND DAMAGES: GEOPOLITICS REVISITED

Despite commitments to halt global warming, global greenhouse gas concentrations are steadily rising, locking in a warmer world even if emissions are reined in substantially from here. People across the globe are experiencing rising sea levels, record-breaking heat, extreme weather events and biodiversity impacts and their consequences. Earth has not been this hot since human civilization started flourishing. There is additional concern that a warming world could trigger several irreversible climate tipping points, irrevocably altering many biophysical systems that human thriving has depended on since time immemorial.

Regardless of whether we push for or seek to delay decarbonization, we are thus simultaneously confronted with the growing risk of climate damage, which brings new complexity to the geopolitics of the Anthropocene. Geography not only impacts international politics but the opposite is also true: human activity has already [fundamentally altered geographic realities](#) for decades if not centuries to come. Consequently, a one-directional framing of geopolitics, in which geography or existing place-based resources influence human interactions, is no longer fit for purpose. Instead, there is a complex, multi-directional interaction

between geographical factors and human behavior.

[According to the Intergovernmental Panel on Climate Change \(IPCC\)](#), hard limits to adaptation have already been reached in some natural systems. This means no adaptive action and no technology can prevent profound risks to these natural and human systems, and with this, effects on health, livelihoods, infrastructure, trade, fiscal stability and economies. The new Loss & Damage framework within the United Nations Framework Convention on Climate Change (UNFCCC) also implicitly acknowledges this stark reality.

Already locked in with current emissions is significant macro-economic damage – [one recent study](#) suggests 19 percent less global income by mid-century compared to a world unaffected by climate change, and more reductions thereafter if emissions are not reined in. Another study highlights that changing climatic conditions may put billions of people outside of the [human climate niche](#), the temperature corridor in which most humans live and where most economic activity occurs. Some areas may well be rendered [unsuitable for human habitation](#), displacing populations deeply rooted in their ancestral lands. Because these impacts are unevenly distributed around the globe, they will increasingly be a source of both domestic and geopolitical tension and contestation.

SHIFTING GEOGRAPHIES OF POWER

The geopolitics of climate change alters how we think about the future distribution of power, influence and (in)stability in international relations. The effects of decarbonization, whether pursued or delayed, together with rising climate and biodiversity impacts, conjures a much more complex picture of “winners” and “losers.” Gains from the supply of critical minerals, for example, may not fully compensate for the economic damage

wrought by recurrent extreme weather events. Applying only a classical lens – which emphasizes the strategic role of and control over geographies and natural resources for military or economic power – neglects complexities and prevents truly strategic foresight.

We recommend the following:

- Consider the costs and benefits of policy action and inaction on different time scales: Climate action creates costs in the short to medium term but avoids costly climate damage in the long run. National institutions with a mandate on energy transitions and climate impacts should commission country-level assessments on the costs and benefits of certain emissions mitigation pathways. Expertise gathered by institutions such as the Intergovernmental Panel on Climate Change (IPCC) can be integrated into holistic and long-term risk assessments.
- Decision-makers everywhere can rely on workshops and wargames to understand the linkages between climate change, biodiversity and integrated security. Upper- and mid-level decision-makers in the security sector should take part in these to deepen their understanding of potentially disruptive, multi-layered impacts. Scenario planning and multi-disciplinary workshops can help build capacity and improve awareness of climate change impacts on defense, humanitarian, and development sectors. Ultimately, this can foster inter-institutional collaboration and better preparedness.

to the nexus of decarbonization and climate change impacts. For Germany, and its incoming new government, this may be actioned through a newly created German National Security Council that regularly requests external briefings covering different time scales of strategy development. The Council could consider collapsing ecosystems and changing monopoly structures to help prepare for geopolitical shifts.

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