‘Rare Earths’ and the new geography of sacrifice in Mekong region

In mid-February 2026, during an exchange at Chiang Mai University in northern Thailand on the growing cross-border impacts of ‘rare earth’ mining, an elderly villager from the Kok River basin, who had remained silent for most of the discussion, slowly raised his hand after listening to explanations about mining activities expanding across the border in Myanmar. He then asked: “So what exactly are ‘rare earths’? And what is really the problem with them?”

It was an ordinary question. Yet it reflected something much larger now unfolding across the Mekong region, the Salween basin, and Southeast Asia, even as the impacts had already begun entering people's everyday lives, many communities living far from the mines still did not fully understand how they had become connected to them.

‘Rare earths’ are not ‘rare’ in the way their name suggests. Many of these elements are found across the Earth’s crust. What makes them valuable is not simply their existence, but the difficulty of finding them in forms and concentrations that can be mined profitably, especially heavy ‘rare earths’. The term describes a group of 17 minerals that have become central to the so-called green energy transition increasingly promoted by governments and corporations around the world. These highly valuable minerals are essential components of electric vehicles, wind turbines, smartphones, and military technologies.

But for people living along rivers in Myanmar, Thailand, Laos, and elsewhere across the Mekong and Salween basins, ‘rare earths’ are coming to mean the exact opposite of what the words ‘clean’ and ‘green’ promise.

Instead, they increasingly mean rivers contaminated by mining waste, forests and mountain landscapes carved up for extraction, rising living costs, food chains filled with toxic substances, and the growing possibility of displacement and losses that may never be recovered.

These transformations may be among the most politically sensitive the region has experienced since forests, rivers, and territories in the Mekong–Salween region were increasingly drawn into expanding markets and extractive economies during the wave of market liberalization in the late 1980s.

Perhaps this was also what lay behind the elderly villager’s question that morning. Although communities in the Kok River basin are already living with the consequences of ‘rare earth’ extraction, especially through polluted rivers and growing uncertainty around forests, water, and livelihoods, it is not always easy to connect the dots between a mineral promoted as essential for ‘clean energy’ and the impacts unfolding far beyond the mines themselves. ‘Rare earth’ mining sites may be located across borders and far from the communities they affect, yet their impacts continue to travel downstream, quietly linking rivers, territories, and people into the same chain of extraction.

‘Rare Earth’ Mining: Extraction That Cannot Be Separated from Power and Money

“Those mountains used to be green before the mining began. Now those mountains are ugly. The rivers have turned red. Some of the chemicals used in the mining pits are simply dumped into the water.”
— Seng Li, human rights campaigner and researcher of mining activities in northern Myanmar (1)

Research findings and satellite imagery show that there are now more than 2,400 mining sites across Southeast Asia (2), revealing devastated landscapes where forests once stood and rivers increasingly burdened by pollution. In the Mekong and Salween basins alone, more than 540 mines have been identified, creating serious risks for surrounding watersheds, especially in Myanmar, where mining activities are closely connected to the Mekong, Salween, and Irrawaddy river systems.

Over the past two decades, northern Myanmar has become one of the world’s most important sources of heavy ‘rare earth’ minerals (3). Although mineral exploration had begun long before, industrial-scale ‘rare earth’ mining first appeared along the China–Myanmar border in Kachin State in the early 2010s and expanded rapidly after 2015, when China tightened domestic environmental regulations and began seeking new sources along its southern border.

Following Myanmar’s military coup in 2021, both Kachin and Shan States emerged as some of the most important, and least regulated, sources of heavy ‘rare earth’ minerals in the world.

For Kachin, ‘rare earth’ mining did not arrive in empty territory. It entered landscapes already shaped by decades of jade, gold, amber, and cross-border mineral trade. Roads had already been carved through mountains. Armed groups had already built taxation systems. Brokers, traders, checkpoints, and extraction economies had already become part of everyday life.

‘Rare earths’ did not create this frontier. They simply found a territory already prepared for another cycle of extraction.

‘Rare earth’ mining has also increasingly become a driver of deforestation, particularly in northern Myanmar. This is especially alarming in places such as Kachin State, long known not only for jade and mineral wealth but also for its forests and river systems that give rise to the Irrawaddy River. Extraction frontiers continue expanding into forested mountains and watershed areas. Environmental observers have warned that vegetation is cleared and trees are cut for mining activities and fuel, while weak environmental safeguards make ecological damage and chemical leakages difficult to control.

“Every tree is dying. Rice fields are becoming less fertile and harvests are declining. Some people say their animals have died near the mining sites,” said a Kachin man who had worked at a ‘rare earth’ mine in the Nhkawng Pa area. He described how mountain slopes were drilled and chemicals injected underground through in-situ leaching, one of the most common methods used in Myanmar’s ‘rare earth’ extraction.

In the silence surrounding ‘rare earth’ extraction, community resistance finally began emerging openly in Kachin State in 2023 (4). Villagers, local leaders, church networks, and civil society organizations began speaking out. Water contamination, land loss, and the growing social costs of intensive mining had become too severe to ignore.

Although these protests did not bring overnight change, they served as undeniable proof that the threats posed by ‘rare earth’ mining were real. At the same time, as state institutions weakened, conflict intensified, and local economies collapsed, extraction became one of the fastest ways for

armed groups (5), brokers, and border business networks to generate income.

The rapid expansion of ‘rare earth’ mining, enabled by conflict and political uncertainty, began moving from Kachin State into Shan State, from the Kok River toward the Mekong, and from small mountain streams toward the Salween River. After the Kachin Independence Army (KIA) expanded its control over major mining areas in late 2024, including Pangwa and Chipwi, mining activities increasingly expanded into Shan State and became more closely connected to the Kok watershed and the wider Mekong basin.

Toxicity Without Borders

“Water and sediment tests in Tha Ton found contamination in both water and soil. Yet until today, no safe water source has been provided. One year has passed, and villagers still have to buy one hundred percent of their drinking and household water… We want to see systematic remedies, economically, agriculturally, and for public health. If certain areas are no longer safe for cultivation, there should be compensation measures to reduce risks for both communities and consumers.”
— Saengrawee Suwikan, representative of Kok River communities

After severe flooding in September 2024, the Kok, Sai, and Ruak Rivers, all tributaries within the Mekong basin, as well as the Mekong itself in northern Thailand, began showing unusual turbidity. Heavy metals were later detected in rivers and streams connected to gold mines and ‘rare earth’ mining areas.

Thailand’s Pollution Control Department confirmed that the pollution originated from mining activities, though it did not specify which type of mine. However, research by Thailand Science Research and Innovation (TSRI) concluded that arsenic levels in the Kok River were more likely linked to ‘rare earth’ mining than to other forms of mining.

By 2025, it was estimated that at least 20 mines were operating in the upper Kok watershed inside Myanmar, with at least one open-pit mine located only one kilometer from the Kok River.

Within just one year, contamination had become an economic burden in daily life. In many Kok riverside communities, families who once depended directly on river water now spend between 1,500 and 3,000 baht (USD 46-93) per month to purchase clean water for drinking, cooking, and bathing. Children, elderly people, and those with chronic illnesses have become the most vulnerable.

Yet the Thai government still has no urgent measures capable of addressing this transboundary crisis. Responses remain limited to warnings, further studies, and proposals to build new water supply systems, raising a deeper question: When contamination spreads across neighboring watersheds, which river will still remain clean enough to rely on?

In 2025 alone, economic losses affecting agriculture, fisheries, and tourism across the Kok–Ruak–Sai–Mekong basin were estimated at 1.3 billion baht (USD 40 million). These figures make clear that cross-border pollution is no longer destroying ecosystems alone. It is now visibly eroding the economies of river communities, and of the country itself.

In April 2026, Thailand’s Pollution Control Department confirmed arsenic contamination in Mekong river sediments in Chiang Rai at 296 milligrams per kilogram, nearly ten times accepted safety levels. In the same month, independent testing in the Salween River, Asia’s last major free-flowing river without large dams, found arsenic contamination above safe levels at every sampling point.

In 2025 alone, Thailand imported more than 102.5 billion baht (USD 3.14 billion) worth of minerals from Myanmar, much of which was destined for China and Vietnam.

The question, therefore, is no longer simply how Thailand can protect its own citizens from transboundary pollution. The deeper question is: As part of the global mineral supply chain, is Thailand prepared to confront this reality with transparency and justice?

Contamination now travels across borders faster than responsibility

“There is a saying that if one day rivers fall into crisis, humanity may fall into crisis as well. When resources become scarce, human beings may begin fighting one another. I cannot help wondering whether we are already moving closer to that point.”
— Lahoo Mue Thu Dangdanwiman
Young Karen representative from the Salween Basin, Thailand

From global green narratives to geopolitical influence and financial flows, ‘rare earth’ mining across the Mekong and Salween regions is creating shockwaves unlike anything seen before.

Environmental defenders are increasingly alarmed by the growing number of ‘rare earth’ mines that are not only reshaping soils, contaminating groundwater, and slowly releasing toxic substances into streams that feed major rivers sustaining tens of millions of people across the region, but are also transforming forest landscapes in northern Myanmar. In Kachin State, where ‘rare earth’ extraction has expanded rapidly in recent years, satellite data have revealed significant forest loss around mining hotspots. Between 2018 and 2024 alone, areas where mining activities were concentrated lost more than 32,000 hectares of tree cover in subtropical and moist forests. (6) What were once forested mountains and watershed landscapes are increasingly being carved into extraction zones, leaving behind damaged ecosystems whose impacts continue to travel downstream across borders.

Mines move. Profits travel elsewhere. But contamination, and suffering, remain. This is defining a new shared map of vulnerability across a region already struggling with energy crises promoted by governments and capital alike.

As impacts spread across the Mekong and Salween basins, communities are growing increasingly alarmed. Civil society groups from Myanmar, Thailand, and Malaysia, river defenders, independent researchers, Indigenous communities, women’s networks, and young people, are beginning to connect what once seemed like separate events into a shared regional experience.

Because in the end, the question is not whether the world needs energy. The question is: Whose green transition is this? And who is being asked to pay for it, with their land, their rivers, and their future?

Project SEVANA South-East Asia - A Thailand-based regional initiative working across the Mekong and Southeast Asia to support environmental justice and strengthen connections among communities, re -searchers, youth, and social movements. Its work focuses on the social and ecological impacts of large-scale development projects, including dams, extractive industries, and energy transitions, while creating spaces for collective learning and cross-border solidarity.

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